# Organisational Change and Safety Culture: The Impact of Communication

CAROLINE ROSEMARY JULIETTE HORBURY

Doctor of Philosophy

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**Summary**

This research examines and explains the links between safety culture and communication. Safety culture, is a concept that in recent years has gained prominence but there has been little applied research conducted to investigate the meaning of the concept in 'real life' settings. This research focused on a Train Operating Company undergoing change in a move towards privatisation. These changes were evident in the management of safety, the organisation of the industry and internally in their management. The Train Operating Company's management took steps to improve their safety culture and communications through the development of a cascade communication structure.

The research framework employed a qualitative methodology in order to investigate the effect of the new system on safety culture. Findings of the research were that communications in the organisation failed to be effective for a number of reasons, including both cultural and logistical problems. The cultural problems related to a lack of trust in the organisation by the management and the workforce, the perception of communications as management propaganda, and asyntonic communications between those involved. Whilst logistical problems related to the inherent difficulties of communicating over a geographically distributed network. An organisational learning framework was used to explain the results. It is postulated that one of the principal reasons why change, either to the safety culture or to communications, did not occur was because of the organisation's inability to learn.

The research has also shown the crucial importance of trust between the members of the organisation, as this was one of the fundamental reasons why the safety culture did not change, and why safety management systems were not fully implemented. This is consistent with the notion of mutual trust in the HSC (1993) definition of safety culture. This research has highlighted its relevance to safety culture and its importance for organisational change.

**KEY WORDS:** ORGANISATIONAL LEARNING, SAFETY MANAGEMENT, QUALITATIVE METHODOLOGY, RAILWAY INDUSTRY.

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# CHAPTER ONE

## *Overview*

> Precision of communication is important, more important than ever, in our era of hair-trigger balances, when a false or misunderstood word may create as much disaster as a sudden thoughtless act.
>
> James Thurber, Lanterns and Lances

This chapter forms an overview of this thesis. It will elaborate the reasons for conducting the research, define the research question and its underlying objectives as well as defining the structure of the research and the type of results attained. The work was conducted with an organisation that had serious concerns about communication and particular concerns with safety, and had implemented a range of initiatives in the face of other pressures and reorganisations.

## 1.1 RESEARCH QUESTION

The research aims to investigate the role of communications in achieving an effective safety culture in a period of organisational change. The study was conducted with the cooperation of a Train Operating Company within the former British Rail, and outputs include recommendations to improve communications and the culture of the organisation, as well as a framework for the examination of these issues. The findings are used to evaluate the utility of the concept of organisational learning in a changing environment.

## 1.2 RESEARCH OBJECTIVES

The objectives of the research are to:

1. analyse communication strategies within the organisation;
2. analyse the organisational culture, and in particular the safety and risk related components;
3. identify failings in the communication process;
4. identify and describe good practice for organisational communications;

5. provide a detailed review of relevant literature;

6. provide a basis for the development of a model integrating organisational learning, safety culture and communications.

## 1.3 JUSTIFICATIONS FOR RESEARCH

The justifications for the research stem from three main sources. The first of these was organisationally driven, where the sponsor organisation recognised they had a problem and sought to resolve this by permitting Aston University to carry out research in communications. The underlying reason for them seeking support is related to the nature of the railway industry and in particular to the upheaval and uncertainty under which the railways have been operating. Under immense changes of management and the regulation of the industry, communication has a key role and is essential for change to be effected in a safe and effective manner. The new operating environment which has emerged with impending privatisation has created a large number of interfaces between the different companies involved. These companies have to cooperate and communicate with each other to ensure the safe, efficient and effective running of the railways both under normal, abnormal and emergency conditions. The different companies have to share safety standards, communicate failures of train units, liaise in the event of emergencies and the development of plans for emergency management, as well as the day-to-day communication and liaison between drivers and signalmen. Communication, also has a fundamental role internally within these companies for the communication of the new operating regime. It is crucial that the workforce understand the new system for managing the railways and particularly the different mode of managing safety with the implementation of the safety management system documented in the safety case.

The second justification for conducting the research was linked to previous research conducted by the author. As part of an MPhil at The University of Birmingham a safety culture evaluation exercise was conducted with British Nuclear Fuels plc (BNFL). One of the principle conclusions from this research related to the importance of communications between all levels of personnel, and particularly personnel involvement and participation in decision-making, as key components of the safety culture regarding both nuclear and industrial safety (Horbury, 1994). Using this previous research as a basis for further study, it was decided that communications should be considered to investigate their importance in the study of safety culture and in achieving safety performance. The findings were consistent with recommendations from Booth (1993) concerning the importance of communication in achieving an

effective organisational culture; and with the research findings of Ryan (1991) who identified the primary indicator of safety performance as effective communication. The philosophy being that communication should lead to commonly understood goals and the mechanisms to achieve organisational goals at all levels of the organisation.

The third justification for conducting the research the need for a greater understanding of how communications and safety culture affect organisational performance. Their importance is evidenced by their role in accident causation, illustrated by disaster inquiry reports. The following examples of disasters and statements from their formal inquiries clearly identified communication and safety culture failings as contributory factors in their causation. The quotations under each incident précis are taken from the formal inquiries of these events and highlight the crucial importance of communication. The importance of communications and safety culture are described in the literature review chapters of this thesis.

KING'S CROSS UNDERGROUND FIRE, 18.11.87
**A fire probably started by a cigarette, rapidly engulfed an escalator on the London Underground**
31 died

> "Similarly a cultural change in the management is required. What is needed is clear accountability for job performance, an open approach to the exchange of information and an injection of outside talent both permanently and in the form of professional advice. Good communications are at the heart of a modern system of mass transportation." (DoT, 1988)

PIPER ALPHA, 16.7.88
**Fire on North Sea oil platform**
167 died

> "They (Senior management) were too easily satisfied that the permit to work system was being operated correctly, relying on the absence of any feedback of problems as indicating that all was well"
>
> "The safety policies and procedures were in place: the practice was deficient." (DoE, 1990)

CLAPHAM RAIL CRASH, 12.12.88
**Three trains collided due to a signalling fault**
35 died

> "There was a total failure to communicate effectively both up and down the lines of management."
>
> "The problem of communication between management and staff is one which can bedevil any industry. The quality and effectiveness of that communication is frequently a reliable guide to the health of that industry. Where the quality of communication is poor the messages

> which should be sent both down and up the structure of an organisation will begin to fail to get through. When those messages fail to get through, staff will no longer be working in the way that management wishes them to and management will not be able to react to the problems that staff are facing and the errors they are making. In this way poor communication leads to poor control and management begins not to manage." (DoT, 1989)

HERALD OF FREE ENTERPRISE, 6.3.1987
**Capsize of Roll On, Roll Off ferry in approach to port**
188 died

> "Clear instructions are the foundation of a safe system of operation. It was the failure to give clear orders about the duties of the Officers on the Zeebrugge run which contributed so greatly to the causes of this disaster"
>
> The court then stressed the importance of "the maintenance of proper channels of communication between ship and shore for the receipt and dissemination of information," and "a clear and firm management and command structure." (DoT, 1987)

These examples clearly highlight poor communications and safety culture as causal factors in the incidents' development. As Turner (1994) states "perennial problems of communications between different kinds of specialist or specialist departments can add to the build-up to a major failure."

## 1.4 FIELD RESEARCH PROBLEMS

There were a number of problems with conducting the research project. These summarised are:

1. lack of control over organisational events;
2. problems of causal inference, very difficult to identify the sources of problems within the organisation;
3. lack of administrative control, the researcher had to comply with organisational events rather than driving them herself.

## 1.5 THE PARADOX OF SAFETY CULTURE

The organisation was newly-developed and was considerably different from its predecessor in terms of employees and the type of work conducted (i.e. many of the high risk jobs were performed by a separate company) which introduced difficulties in terms of extrapolation and the use of safety statistics. Hence a qualitative research

methodology was adopted to build up a rich picture of the organisation based on rigorous data analysis.

Culture is not the product of communication, as culture is affected by more than the organisation's contribution including social background, history, society and education. So how the organisation builds upon the culture and manipulates it and the efficacy of this is central to the research. Definitions of safety culture overlook this aspect and emphasise communications as fundamental to an improved culture, whilst in reality these may not effect the safety culture of the organisation. Hence the crux of this thesis is to look at the effectiveness of communications within the organisation, and the effect of organisational culture in preventing or facilitating the transmission of material. The research also considers the effect of organisational change on the safety culture, to gauge the success of organisational communications in manipulating the safety culture during a period of change.

## 1.6 CHAPTER HEADINGS

The following is a list of chapter titles and the topics covered within that section:

| CHAPTER | TITLE | CONTENT |
|---|---|---|
| One | **Overview** | Introduction and overview to the research |
| Two | **Organisations: theory of culture & learning** | Part One of literature review covering organisational culture, communications and learning |
| Three | **Safety: culture & its management** | Part Two of literature review covering issues introduced in part one applied to safety. |
| Four | **A description of a Train Operating Company & its Management** | Provides a summary of the organisation, discusses its management and both its organisational and safety cultures. |
| Five | **Philosophical methodology** | Describes the philosophical justifications for the research methodology. |
| Six | **Narrative** | Describes the process of carrying out the research from the perspective of the researcher. |
| Seven | **Procedure** | Provides a step-by-step account of how the research was actually carried out. |
| Eight | **Results: Management's perspective** | Recounts the results from the research relating to management and communications. |

| | | |
|---|---|---|
| Nine | **Results: Organisational change** | Displays matrices of attitudes within the organisation, and results from the attitude survey. |
| Ten | **Discussion of Results** | Discusses the research findings with reference to the organisation. |
| Eleven | **Implications of results** | Results are discussed with reference to academic literature for consistency and divergence. |
| Twelve | **Wider implications of research** | The implications of the research in the future, critical review of research and suggestions for further research. |
| Thirteen | **Conclusions** | Conclusions from the research. |

# CHAPTER TWO

## *Organisations: Theory of Culture and Learning*

Although safety is the primary focus of this research thesis the intent is for safety to be considered within the framework of organisational culture and organisational learning. Consequently the literature review will discuss the literature on organisations, including organisational culture and organisational learning to justify the research design and provide a paradigm for the results of the research.

## 2.1 ORGANISATIONS

Prior to considering the concepts of organisational learning and culture it is worthwhile to consider what is an organisation. The Concise Oxford Dictionary defined an organisation as "the act or instance of being organised", and "an organised body, esp. a business, government, department, charity etc." (Allen, 1990). This definition was extended such that:

> "organisations are collections of people joining together in some formal association in order to achieve group or individual objectives. At least one set of objectives for any organisation will relate to the production and output of specified goods and services to individuals, groups and other organisations."
>
> Dawson (1992)

Hence an organisation is defined in terms of an output and the means by which an output is achieved. This concurs with the perspective of Handy (1985) who considers organisations as comprising a collection of individuals and political systems. So individuals have separate personality characteristics, separate needs and ways of adapting to roles; whilst political systems are systems which have defined boundaries (so that membership is known); goals and values; administrative mechanisms and hierarchies of power. Hence an organisation is composed of individuals, who through the application of power via a political system, achieve certain outcomes.

The major dimensions of organisations were categorised by Child (1988) as "the:

1. allocation of tasks and responsibilities to individuals;

2. designation of formal reporting relationships determining the number of levels in hierarchies and the spans of control of managers and supervisors;

3. grouping together of individuals in sections or departments, the grouping of departments into divisions and larger units, and the overall grouping of units into the total organisation;

4. design of systems to ensure effective communication of information, integration of effort, and participation in the decision-making process;

5. delegation of authority together with associated procedures whereby the use of discretion is monitored and evaluated;

6. provision of systems for performance appraisal and reward which help to motivate rather than to alienate employees."

The concept of control is important within organisations and is implicit within their definition. Clearly little would get done by or in organisations if some control mechanisms were not in place to direct and coordinate activities. Control refers to the way an organisation's outcomes are achieved and the predictability of achieving these ends. O'Reilly (1989) defines a control system as "the knowledge that someone who knows and cares is paying close attention to what we do and can tell us when deviations are occurring." Hence his broad definition covers traditional control systems ranging from planning and budgetary control systems to performance appraisals and social control systems, where agreements exist among people about what constitutes appropriate behaviour. The traditional means of control in organisations is "utilitarian" as Etzioni (1961) pointed out, which uses "economic power to elicit compliance with rules and regulations from a workforce concerned mainly with maximising material rewards". Hence, these traditional bureaucratic work organisations from Weber (1947) rely on rules and regulations and close supervision to ensure these systems are followed. Weber asserts that they succeed due to the efficient system of coordination and control. This is demonstrated in the hierarchy of authority and the system of rules which assure the control of individual's action in the organisation.

## 2.2 COMMUNICATIONS

Communications are essential within organisations. Davis (1961) estimated, on the basis of American evidence, that out of information communicated by top management, two-thirds of it was understood as intended by vice-presidents, 40% of

it was understood as intended by middle managers, 30% by the foremen, and 20% by production operators. If, as Weick (1991) states, communications are essential because "organisations are built, maintained and activated through the medium of communication," then when, "communication is misunderstood, the existence of the organisation itself becomes tenuous." Hence communications are fundamental for the operation and control of organisations or as French et al (1985) state they are "the glue that holds organisations together".

Simon (1945) points out that organisations are controlled because people's behaviour can be influenced through communication. So whilst authority, control, and motivation are clearly not aspects of communication they are expressed through communication. A relationship between communication variables and independent, objective, organisational-level performance measures is assumed and stressed by management textbooks e.g. Peters & Waterman (1982), Dawson (1992). However little objective research has been conducted. As Handy (1985) states "communications are symptoms, good communications imply a well-designed, healthy organisation".

Incentives, information flow and resource allocation are, in turn, rooted in the structure, the procedures and the culture of the organisation (Weick, 1987); all of which are critical in system safety (LaPorte, 1988). So if an organisational structure is strictly compartmentalised with no feedback, and no horizontal connections it is likely to cause information gaps, inconsistencies and inefficiencies in risk management. Feedback is an essential aid for making managers more aware of the consequences of the goals they set. Weick (1991) goes on to differentiate between communications in hierarchies, which activate different mindsets and the effects of different strategies upon communication (e.g. gatekeeping, summarisation, changing the emphasis within a message). Hence the organisational structure, and its associated communication mechanisms, will influence organisational performance.

### 2.2.1 Communication - the process

Communication theory has evolved from linear models of sending and receiving messages to process models that emphasise the social construction of messages and how meaning is produced (Smircich & Calas, 1987). So linear models look at the movement of messages from point to point, paying special attention to channels, blockages and filters that hinder effective message transmission (Putnam, 1983). However recent research looks at the social construction of messages and meaning (Lackoff & Johnson, 1980; Putnam & Pacanowsky, 1983) and how words, symbols and actions of human actors create and sustain social reality.

Fisher (1978) proposed four conceptual approaches to human communication: *mechanistic, psychological, interpretive-symbolic, and systems-interaction* perspectives. The basic components of any communication systems are message, channel, sender/receiver/ transmission, encoding/decoding, meaning, feedback and communication effects. Elaborated these are:

- message: refers to verbal and non-verbal cues each communicator conveys;
- channel: vehicle or medium in which a message travels;
- sender: individual who sends a message or the generalised source;
- receiver: denotes a message's destination, or the person who receives and deciphers the message;
- transmission: refers to the actual sending and receiving of messages through designated channels;
- encoding and decoding: the process of creating, transforming and deciphering messages;
- meaning: developed through making sense of the message;
- feedback: a message sent in response to the initial message;
- communication effects: a number of specific definitions, but refers to the outcome or general results of the message exchange process.

The Mechanistic Process is where communication is viewed as a transmission process in which a message travels across space from one point to another. The locus of communication is the channel. Most research in this area has focused on message transmission as a chainlike process and attempts to identify points in the hierarchy where communication breakdowns occur.

The Psychological Perspective looks at how characteristics of individuals affect communication. Fisher (1978) introduced the notion of conceptual filters, which consist of communicator's attitudes, cognitions and the internal states of individuals which affects not only what information is attended to, conveyed and interpreted but how the information is processed. Research therefore has considered communication in hierarchical power relationships and how this modifies what is communicated.

The Interpretive-Symbolic Perspective is the notion that organisational communication consists of patterns of coordinated behaviours that have the capacity to create, maintain and dissolve organisations e.g. Daft & Weick, (1984), Hawes (1974), Weick

(1979). So, because individuals communicate they create and shape their own social reality. This perspective focuses on role-taking and shared meanings as forming organisations, and these patterns of coordinated activities create, maintain and dissolve organisations. Individuals respond to others based on role-taking and shared meanings for words and actions. These meanings are devised symbolically through the mutuality of experience and through negotiating consensual interpretations of organisational events and activities. The emphasis is therefore on cultural factors and their impact on communication.

The fourth approach is the Systems-Interactive Perspective which concentrates on external behaviours. This perspective is distinguished by:

a) time, communication acts occur in meaningful ways and change with respect to time;

b) communicative acts, interacts and double interacts, a recurring sequence of three contiguous messages exchanged by communicators;

c) the probabilities with which interacts and double interacts occur in social interaction;

d) phases or patterns of interaction and recurring cycle.

The research focus is therefore on sequential communicative acts and patterns of recurring behaviour to explain the communication system.

Communication is defined as the sending of information (a message) and its receipt. It is assumed that the transmission of a message will result in some 'change' in the receiver as they have acquired information which may decrease uncertainty and increase levels of knowledge and give the capacity to act or understand. How the message is received is as critical as how the message is transmitted. The cycle can be supplemented by feedback from the receiver to the sender. This process is dependent on a number of factors. If a mechanistic approach is taken towards evaluating communications, as defined by Fisher (1978), then the components of communication involve considering the sender, the message, the channel and the recipient. Components for an effective system would involve consideration of the features detailed in Table One (Bignell & Fortune, 1984).

| SENDER | MESSAGE | CHANNEL | RECIPIENT |
|---|---|---|---|
| Sensitive | Accurate | Swift | Literate |
| Aware | Direct | Secure | Attentive |
| Selective | Reliable | Capacious | Perceptive |
| Sympathetic | Up-to-date | Economical | |
| | Timely | Low noise | |
| | Adequate | | |
| | Economical | | |
| | Addressed correctly | | |
| **ACTIVE** | **SENT** | **OPEN** | **PRESENT** |

***Table One: Communication components (from Bignell & Fortune, 1984)***

The bottom of each column refers to the necessary characteristics of the components, so the sender must be active, the message must be sent, the channel must be open and the recipient present. These features are both necessary and sufficient for the communication process to be totally effective.

It is also important to recognise that communications within an organisation are affected by the organisational culture. From Table One it can be seen that organisational culture would affect all these stages. As Reilly & DiAngelo (1990) state, communication is "not about words and messages directly but about an environment which gives words and messages a meaning consistent on both sides of the message." The term environment in this context refers to the organisational culture, and is about agreements, unities, common goals and concerns, and involves issues of trust and security. Dansereau et al (1987) stated that to understand communication it is necessary to understand how it is affected by worker attributions, shared perceptions or definitions of a situation, the multiple organisational roles (e.g. supervisor, subordinate, co-worker) and the shaping and framing attempts of others. Hence the organisational culture, and the views of individuals within the organisation are a key element in the success or failure of the communication process.

### 2.2.2 Previous research on organisational communication

A review of previous communication research was undertaken to investigate the kinds of research conducted on organisational communication, and highlight relevant findings for consideration. Lawler et al (1974) state that "the communication patterns used by the organisation has an immediate impact upon the individual's life within that organisation." They emphasise the crucial importance of considering communication, considering context and action is critical and to identify which types of communication

characterise different organisational events, and whether changes in communication can influence action or cognition, and affect the performance.

Communication facets often discussed concern: directionality of information flow (Graves, 1972); accuracy and distortion of information (Read, 1962, Wilensky, 1967), types of communication mechanism used in transmitting information (Lawler et al, 1968), gatekeeping, or someone who controls information transmission (Davis, 1968), overload (Porat and Haas, 1969), satisfaction with one's communication (Lawler et al, 1968, Lawson 1965). Bellamy (1984) identifies some communication errors as: beliefs that communication was not necessary; use of an informal communication system; a formal communication system being allowed to lapse; blocked communication channels; noisy communication systems being used and incomplete or inaccurate encoding of information.

Roberts & O'Reilly (1974) developed a questionnaire to investigate organisational culture and communication within organisations considering personal interactions, and internal and external interfaces. Their research suggested that organisations can be differentiated on the basis of communication characteristics. One of their key findings showed a strong relationship between the degree to which organisational members perceive information at work to be accurate and organisational performance. Roberts and O'Reilly conclude "if the case often made by organisational theorists is correct - that "good communication" makes a difference - then an understanding of what is "good communication" and its correlates, should increase our knowledge of organisational behaviour." They define interpersonal variables affecting communication as: trust, sender's perception of the receiver, mobility aspirations, job satisfaction, and job performance.

Muchinsky (1977), using Roberts and O'Reilly's questionnaire technique to investigate organisational culture and communication, found some statistically significant relationships between organisational communication, organisational climate and job satisfaction dimensions. The seven dimensions of organisational communication which impacted most strongly on organisational culture were: trust, influence, desire for interaction, accuracy, downward information flow, lateral information flow, and satisfaction with communication. This replicates the findings of Roberts & O'Reilly (1974).

Wilensky (1967) postulates three organisational conditions which increase the probability that information in an organisational communication network will fail to reach the appropriate individuals. These conditions relate to whether an organisation is hierarchical, which restricts the free flow of information; if its units are specialised,

hence decreasing communication between sub-units horizontally; and if the organisation is centralised where the decision-makers are too far removed from reality to function effectively. 'Groupthink' (Janis, 1972) is where group cohesiveness or pressures towards group conformity may also suppress the free flow of accurate information.

Dansereau et al (1987) state that 'openness' is positively related to job satisfaction and satisfaction with supervision. They found that messages moving up an organisation get distorted for a number of reasons, including e.g. gender, message factors (message importance, relevance, content), relational issues (trust, influence) and organisational variables (e.g. organisational structure, technology and climate). Fulk & Mani (1986) also show that subordinates are unlikely to communicate negative information about themselves upwards. These findings are of particular significance with regards to safety-related topics and the concept of organisational learning, where communication is essential for lessons to be learned from near misses and ensuring operational readiness. Previous research findings are mainly reductionist and fail to explain underlying processes as they attempt to correlate subjective perceptions with objective circumstances.

The present research intends to pursue an interpretative approach, as defined by Gundykunst et al (1985) where communication behaviour is seen as the primary vehicle for the active creation and maintenance of culture.

Reilly & DiAngelo (1990) expand these ideas, stating that for effective communication it is necessary to have an open environment for the message giver and message receiver. This is attained through a number of features, including an environment where both managers and employees feel respected, recognising people as intelligent and capable of sound decisions, and an environment where the open flow of information is advocated. Participative decision-making is also supported. However, it is important to remember that communications may not be the source of all problems and that improving communications could result in greater dissatisfaction with the organisation and increase divisions within the organisation (Dawson, 1992).

Katz & Kahn (1978) described the role and functions of different types of communication within an organisation. They were categorised according to whether the information is transmitted downwards, upwards or laterally. They identify information downwards as:

- specific task directives i.e. job instructions;

- information designed to produce understanding of the task and it's relation to other tasks i.e. the job rationale;
- information about organisational procedures and practices;
- feedback to subordinates about their performance;
- information of an ideological character to inculcate a sense of mission i.e. indoctrination of organisational goals;

Lateral communication, according to Katz & Kahn is required for coordination, gives social and emotional support. Argyle & Henderson (1985), supplement this with the fact that communication is important at a personal level for its contribution to job satisfaction, for helping to establish and maintain interpersonal relationships, for entertainment, for the creation of understanding amongst people, and for promoting employee morale and well being.

Upward communication serves a control function, reports progress, and provides a feedback mechanism for downwards communication. It is important for fostering employee participation, involvement and commitment. So it's what people say about:

- themselves, their performance and their problems;
- others and their problems;
- organisational practices and policies;
- what needs to be done and how it can be done.

Organisational communication is considered as communication that affects the operation of an organisation whether implicitly or explicitly. It can be differentiated according to whether it is internal or external to an organisation, and its directionality - upwards, downwards and laterally. The channels used can either be formal or informal. Downwards communications have received more attention from management theorists, and many guidelines have been published relating to them.

### 2.2.3 Summary of organisational communications

Kanki and Palmer (1993) define the functions of communication as:

- "providing information
- establishing interpersonal relationships

- establishing predictable behaviour patterns
- maintaining attention to task and monitoring
- is a management tool."

Communication models such as Shannon & Weaver (1949) are not sufficient to describe organisational communications assert Roberts & Hunt (1991), as many interactions occur simultaneously and are affected by authority, the purpose of communication and the external environment. Information has many uses within an organisation, and is acquired and distributed within organisations for several reasons, e.g. it can be used as a weapon in intra-organisational debate (Sabatier, 1978), a source of power (Shukla, 1982; Spekman, 1979), justification for ideologically based decisions (Sabatier, 1978), a symbol of adherence to norms (Feldman & March, 1981) and contributes to organisational learning (Hedberg, 1981; Nonaka & Johansson, 1985; Wilensky, 1967).

Hence communications have many roles within organisations and many of these relate to the notion of organisational management in terms of understanding the events and occurrences within an organisation. The next section develops the notion of organisational culture and its role in organisational management.

## 2.3 ORGANISATIONAL CULTURE

### 2.3.1 The Concept of Culture

Culture as a concept derives from the field of anthropology and sociology. Tylor, an early anthropologist introduced the term in 1881 and defined it as referring to "that complex whole which includes knowledge, beliefs, art, morals, law, custom and any other capabilities and habits acquired by man as a member of society" (cited in Tylor, 1971). The description has developed and expanded such that it is typically a word used to characterise an organisation as a whole, or a particular lifestyle of a social group (a sub-culture of a larger group) within the social structure; or "the pattern of ideas, beliefs, values and knowledge that the members of a social group or society have about themselves and their social and physical environments" (Weeks, 1978).

Culture, as defined by Goodenaugh (1970) is "in the minds and hearts of men", so it is a learned body of tradition that governs what one needs to know, think and feel in order to meet the standards of membership. It can also be considered as the 'perspective' that is shared by the people in a particular group; a common

understanding which characterises the group since these understandings make up such perspectives and constitute the premises of action, then those with a similar background engage in similar patterns of activity (Weeks, 1978). Hence the central concept of these definitions varies from ideologies, to a coherent set of beliefs, basic assumptions, core values, important understandings or collective will (Sackmann, 1992). Haber, O'Brien, Metlay & Crouch (1991) consider culture as the belief, perceptions and expectations that individuals have about the organisation in which they work, and about the values and consequences that will follow from one course of action or another. Consequently culture highly influences and affects the choice of behaviours within an organisation.

Rohner (1984) believes that culture can be considered either as behaviour or as symbols. Behaviour is regularly occurring, organised modes of behaviour in technological, economic, political, familial and other institutional domains within a population; whilst symbols are a system of meaning in the heads of multiple individuals within a population. However most authors e.g. Rohner (1984), Smircich (1983), Schein (1985, 1990) consider culture as a learned phenomenon which varies from one population group to another.

A shared culture is a consequence of mutual understanding which Douglas (1992) emphasises. So there is agreement on the terms in which claims are legitimated, actions justified and honour defended for societies to exist. The beliefs and values that are accepted in a given society at a given time represent the outcome of countless individual disputes and agreements, and thus reflect countless judgements on the part of individuals in the development of cultures (Hargreaves-Heap & Ross, 1992). Nicolet (1992) believes that culture can not be separated from society, but that culture flows from it, from its activity, from its surroundings, and from its country. Hence culture is considered as the history of a given community, it shapes man and his behaviour and is a "shared whole" in a community of individuals.

### 2.3.2 Organisational Culture

Organisational culture was recognised as a form of organisational control, when it was realised that constant supervision was not viable and that another form of control was required in organisations. So there was a move towards normative control, where individuals are driven by internal commitment and strongly identify with company goals - i.e. have a strong organisational culture. The study of excellent companies by Peters & Waterman (1982) demonstrates this standpoint:

> "Without exception, the dominance and coherence of culture proved to be an essential quality of the excellent companies. Moreover the stronger the culture and the more it was directed toward the marketplace, the less need there was for policy manuals, organisation charts, or detailed procedures and rules. In these companies, people way down the line know what they are supposed to do in most situations because the handful of guiding values is crystal clear."

So the notion of culture has supplemented in part organisational policies and procedures.

### *2.3.2.1 Origins of Organisational Culture*

However Whyte (1956) cautioned:

> "no one wants to see the old authoritarian return, but at least it could be said of him that what he wanted primarily from you was your sweat. The new man wants your soul."

Hence the concept of organisational culture could be viewed as a form of tyranny. The fundamental concept of cultural control seems to be that implicit control systems based on internalised meanings and values, are a more effective means of achieving coordination than external control systems which rely on explicit rules and regulations. Hence culture plugs a gap in the battery of managerial controls by providing an internal mode of control. As Inzerelli (1980) points out:

> "no organisation can rely entirely on external controls because not all human activities can be controlled in this way and because external controls generate their own dysfunctions. Every organisation must rely to some degree on its member's voluntarism and identification as motivation to perform, that is, on internal controls."

Brown (1995) states that the origins of current interest in organisational culture stem from four sources. These sources are organisational climate, national cultures, human resource management, and from a realisation that structural approaches could not adequately explain organisational performance.

**(I) Organisational Climate**

Organisational climate refers to the beliefs and attitudes held by individuals about their organisation. Tagiuri & Litwin (1968) states that climate is a relatively enduring quality of an organisation that is experienced by employees, and influences their behaviour. Brown (ibid.) concludes that results from climate research suggest that within organisations there is little agreement between employees concerning what their organisation is like.

### (II) National Cultures

Work on national cultures was given an impetus when Japanese industry started to succeed in the world markets. A number of influential books including "Theory Z" (Ouichi, 1981) and "The Art of Japanese Management" (Pascale & Athos, 1981) suggested that it was possible to adopt some of the Japanese business practices and to change the culture and hence to share the success of Japanese organisations. As Japan succeeded commercially, there was much interest in recreating their culture within organisations to replicate their success. The success of Japan was attributed to their unique culture and much effort was devoted to replicating this stereotypical version of Japanese culture. However the national culture within Japan is very different from Western cultures, and the philosophy that cultures can easily be created is probably simplistic. Research into organisations within the United States and Japan suggests that successful cultures have a flat open structure which is characterised by high levels of discretion, open communications, the recruitment of a relatively large proportion of professional specialists and the careful development of humanistic employment conditions to provide a strong base for unobtrusive controls, supplemented by output rather than bureaucratic controls. A number of books were published in the vein of changing organisational cultures to achieve organisational success (e.g. Deal & Kennedy, 1982; Kanter, 1983; Peters & Waterman, 1982).

### (III) Human Resource Management

Human Resource Management's role within the organisational culture philosophy concerns a move towards a more humanist style of management. These involve considering values and beliefs within the organisational culture and their compatibility with human resource policies, programmes and systems.

### (IV) Organisational Performance

The final strand relates to the discovery that structurally similar organisations widely differed in terms of their commercial performance. Hence organisational culture was accepted and cited as a possible reason for these differences as it offered a non-mechanistic, flexible and imaginative approach to understanding how organisation's work.

From these roots the concept of organisational culture has developed. The following section will define the concept of organisational culture.

### 2.3.2.2 Definition of Organisational Culture

Events in an organisation are often uncertain and ambiguous (Morgan, 1985; Schein, 1990). Organisational culture develops as an active, living phenomenon which creates symbols and meaning to decrease the uncertainty and ambiguity. It can therefore be considered as a reality constructor which shapes the reality of the organisation by persuading others that certain factors (e.g. organisational costs or safety) should be given priority in the way the organisation is run. An organisational culture is determined by a unique blend of policies, values, attitudes, myths, history, self image which simply becomes "the way things are done" in a particular organisation (Joksimovich, 1992). So within an organisational setting, culture is generally viewed as the shared rules governing cognitive and affective aspects of membership in an organisation, and the means whereby they are shaped and expressed. Of particular concern is the shared meanings, assumptions, norms and values which govern behaviour, the way these are encoded, and the causes and consequences of cultural forms, and their relationship to various measures of organisational effectiveness. Or, as Hofstede (1990) defines it:

> "the collective programming of the mind which distinguishes the members of one group or category from another."

As a result of the proliferation of prescriptive interpretations of culture, it is viewed as a control mechanism causing people to behave uniformly and predictably which is achieved socially rather than structurally (Leavitt & Bahrami, 1988). Hence a 'strong culture' does not mean strength in any values, but strength in particular values as selected by researchers (eg. Kanter, 1989; Peters & Waterman, 1982). Much of this management literature e.g. Peters & Waterman (1982), Ouichi (1981) specify desirable characteristics of an organisational culture. The total organisational culture includes the climate, belief systems, rituals, values and myths and legends of the organisation. These characteristics, though tend to be intangible, except in very strong and unusual cultures. Therefore there is a need to examine the theoretical underpinning or rationale, rather than just the tangible surface manifestations of organisational cultures. Corporate culture rests in distinctive capacities and incapacities which, as a result of the evolution of culture, have become defining features of the way the organisation works by being built into the attitudes and approaches of its employees.

Culture is currently viewed as central to understanding control and resistance to change in an organisation (Shipley, 1990). Culture allows an organisation and individual to cope with uncertainty about the future, the present and the purpose and meaning of life. However there are many unanswered questions concerning how cultures evolve, what influences their formation and whether it is possible to design

and manage a culture. Culture is initially formed by the leaders of an organisation, however these leaders may not necessarily be the managers but could be innovators and opinion makers (Kilmann, Saxton & Serpa, 1986; Morrisseau & Schoenfeld, 1988).

Culture has been seen as a root metaphor for organisational analysis stressing 'how organisation is accomplished' (Coombs, Knight & Willmott, 1992; Smircich, 1983), as opposed to those approaches where culture is a variable whose manipulation can render organisations more efficient (Peters & Waterman, 1982; Ouichi, 1981). The latter approaches are those of management schools where terms such as excellence, positive and strong are used in reference to culture in attempts at changing the culture to improve an organisation's efficiency by following a number of philosophies. However they assume that culture is uni-dimensional and a simple variable, which masks the question concerning the content of cultures, or an understanding of organisational culture (Hollway, 1991; Morgan, 1985). Therefore an understanding of what culture consists of and how it is influenced is required, as recommended by Kunda (1992).

Denison (1990) described organisational culture as a set of 'soft' behavioural variables which underlie internal organisation. However many definitions of organisational culture exist, and there is a lack of specificity with regards to organisational culture (e.g. Ott (1989) lists 73 words/phrases used to define organisational culture).

There is a problem of finding an all-encompassing definition of organisational culture as it has been considered either a background factor, an important influential factor or as a metaphor for conceptualising organisations (Smircich, 1983). However, whatever the focus, attention is given to the expressive non-rational qualities of the experience of an organisation which examines the 'taken-for-granted', raising issues of context of meaning, and bringing to the surface underlying values. Instead of defining culture, it may be more useful to consider its characteristics and functions. Schein (1985) considers it to have an adaptive function which arises to reduce uncertainty in an uncertain environment by external adaptation and internal integration. Rohner (1984) states that culture stems from a recognition of fundamental orderliness and regularity of human life under most circumstances. These manifestations can be explicit or implicit, and be displayed either verbally or non-verbally. Cultures are rarely stable as they evolve in response to a changing external environment (Morgan, 1985).

Anthony (1994) elaborated the difficulties of changing organisational culture thus:

> "It is argued that management seek to close the gap between their employees requisite and actual performance, not only by mechanisms of 'primary' control but also by imposing their strong belief systems as a 'strong' culture. However , such belief systems are never successfully

> transmitted beyond the boundaries of management to the intended recipients, resulting in management's ultimate isolation."

This thesis is elaborated in his paper entitled "The Paradox of the Management of Culture, or 'He who leads is lost'", which asserts that persistent culture change is rare and that coercive methods are used to attempt to change culture. Within organisations management understands the message it is sending and intends it not only to be understood by the receivers but to affect the belief systems, their values and the very meanings they ascribe to language. However the communication is not successful. Anthony (1994) ascribes this to asyntonic communication, which is the converse of syntonic communication which is defined by the Oxford English Dictionary as "a system of wireless telegraphy in which the transmitting and receiving instruments are accurately tuned, so that the latter responds only to vibrations of frequency emitted by the former". Hence the idea is that the transmitter and decoder are not accurately tuned and that communication is not successful as a result. This is an important point to remember when communications and culture change are being considered.

The principal author attempting to elaborate and operationalise organisational culture is Schein (1985, 1990). Schein (1990) views culture as a layered phenomenon, composed of inter-related levels of meanings, ranging from those relatively observable to those mostly invisible. These levels are represented as:

1. artefacts and creations (technology, arts, visible and audible behaviour patterns);
2. values; and
3. basic assumptions.

Hence a person entering an organisation observes and perceives its artefacts, which includes everything from the dress code, the way people treat each other to more permanent archival manifestations such as company records, statements of philosophy and annual reports. The values and beliefs give the reasons why people behave as they do (Schein, 1985), or justifications of behaviour (Sathe, 1985). Some authors limit their definitions to values and beliefs eg. Deal & Kennedy (1983) and Calori & Sarnin (1991). Basic assumptions are the fundamental beliefs, values and perceptions that "have become so taken for granted that one finds little variation within a cultural unit" (Schein, 1985). One of the central concepts of organisational culture is the idea of shared values, and that employees would experience greater satisfaction and commitment and exhibit higher levels of performance, as their individual work values approached those of their supervisor and the organisation's management (Meglino et al, 1989).

Problems with the concept of organisational culture were stated by Wilson (1992) as:

1. "assumes 'one best way' of organising;
2. assumes a simple causal relationship between culture and performance;
3. generally dominated by a top-management view of the organisation;
4. lacks a well argued theoretical basis, preferring to borrow selectively from other work."

Wilson (1992) continues:

> "Organisational culture can serve initially as a useful device for establishing core values such as team spirit, collective responsibility, consistency and quality. These can help to provide the energy for organisational growth. Yet, in time, they can also stifle profitability, since the organisation gets locked into specific ways of operating and the new found strong culture increases the level of resistance to changing it".

He labels this the paradox of organisational slack, where an effective organisation creates slack, which makes it easier to implement change, but the motivation of individuals to undertake change is lowered as they are happy as they are. So slack alters the sensitivity of the organisation in recognising problems and in responding to environmental changes (Hedberg, 1981).

These difficulties of organisational culture were elaborated by Bate (1994), who stated that "cultural continuity is their goal" and these organisational members avoid change much "like people on the deck of a ship who lean one way, then the other, in order to counteract the movement of the waves". Bate continues on this theme stating that people have "vested interests in preserving the status quo: vested interests and their power base become inextricably intertwined with a strategy, and the political obstacles to strategic reorientation grow". Hence in recent years it has been recognised that organisational cultures are not easily changed and that cultures actively resist change.

### 2.3.2.3 Methods for studying organisational culture

Interest in studying organisational culture arose from attempts to understand how organisational internal environments might be conceptualised, assessed and most importantly controlled (Deal & Kennedy, 1982). Many studies have been presented on organisational culture, some based on research and many presented as advice to managers. Within the research literature culture has been considered as an external variable; informal organisation; and as the formal and informal organisation.

## *(I) Culture as external variable*

This field of research derives mainly from that of comparative management and is compatible with traditional anthropological conceptions of culture. Culture is seen as an external, independent variable imported into culture through its members (Smircich, 1983), so the organisational culture resides in different groups, either geographic, linguistic or ethnic. Comparisons can therefore be made, for example Ouichi (1981) compared Japanese and American management styles, whilst Inzerelli & Laurent (quoted in Smircich, 1983) compared French and American manager' conceptions of organisational structure. However studies of this kind are flawed as they are ethnocentric in that these evaluations only use criteria relevant to their own culture.

## *(II) Culture as Informal Organisation*

Within this research philosophy culture is conceptualised as 'informal organisation' - the expressive and non-job related aspects of organisational life. This was succinctly stated by Pacanowsky & O'Donnell-Trujillo (1982):

> "the jumping off point for this approach is the mundane observation that more things are going on in organisations than getting the job done ... but people in organisations gossip, joke, knife one another, initiate romantic involvements, cue new employees on ways on doing the least amount of work that still avoids hassles from a supervisor, talk sports and arrange picnics. Now it seems to us quite a presumption that work activities should have some kind of ascendant hold on our attention, whereas picnic arranging should not."

Studies from this viewpoint look at organisational values. So how these values are created or transmitted by organisational myths, stories and legends (Boje, Fedor & Rowland, 1982; Tommerup, 1988); jokes, rituals and ceremonies (Deal & Kennedy, 1982); symbols and specialised language (Andrews & Hirsch, 1983). Culture is viewed as "shared key values and beliefs" and researchers seek to examine and understand how shared understandings, meanings, norms and values are developed within specific organisational settings (Jeninek, Smircich & Hirsch, 1983; Smircich, 1983). The assumption is that organisational cultures unify behaviour, and when its components are understood, then it can be moulded and shaped by management (Smircich, 1983).

### *(III) Culture as Formal and Informal Organisation*

Gregory (1983) suggests application of the

> "anthropological approach in corporations leads one to study participant's views about all aspects of the corporate experience. These would include the work itself, the technology, the formal organisational structure, the everyday language, not only myths, stories or special jargon. That researchers select these for special emphasis says more about the culture of the researchers than the researched, for whom all culture is equally taken for granted."

In her research into rapidly changing computer firms in Silicon Valley, the most appropriate unit for investigation was how participants made sense of the change themselves. She discovered that "the project" was the most important unit of interaction for computer professionals, which overrode in many ways the company itself. She documented how "the project" organises interaction, as well as focus and commitment for individuals. Gregory's findings are consistent with those of Weick (1979) who stresses the need for researchers to focus on the organising processes out of which a sense of organisation unfolds and is enacted, instead of continuing to examine organisations as objective, concrete, material and unproblematic entities.

## 2.3.3 Summary of Organisational Culture

Lundberg (1990) reports a number of themes, and these are taken as conclusions on the topic of organisational culture:

- a shared, common frame of reference i.e. it is largely taken for granted and is shared by some significant portion of members;
- acquired and governs i.e. it is socially learned and transmitted by members and provides them with rules for organisational behaviour;
- a common psychology i.e. it denotes the organisation's uniqueness and contributes to its identity;
- enduring over time i.e. it can be found in any fairly stable social unit of any size as long as it has a reasonable history;
- symbolic i.e. it is manifested in observables such as language, behaviour, and things which are attributed meanings;
- at its core typically invisible and determinant, i.e. it is ultimately comprised of a configuration of deeply buried values and assumptions;

- is modifiable, but not easily so.

## 2.4 ORGANISATIONAL LEARNING

Cyert and March (1963) proposed that the concept of organisation is as an adaptively rational system that learns from experience. Hence organisations have been described as capable of learning, the following section intends to elaborate on the concept of organisational learning considering the extent to which organisations learn and where the learning is located within the organisation.

### 2.4.1 Introduction to Organisational Learning

Shrivastava (1983) identified four perspectives on organisational learning. These are:

1. Adaptive Learning - where organisations adapt to problems, opportunities and changes in the environment by adjusting goals, decisions and behaviours. Learning is incremental through the adjustment of goals and decision-making (e.g. Cyert & March, 1963; March & Olsen, 1976);

2. Assumption Sharing - an organisation's theories-in-use result from shared assumptions and values. Learning involves changes in these theories (e.g. Argyris & Schon, 1978; Weick, 1979);

3. Development of knowledge - learning is the process of acquiring knowledge of the relationship between organisational actions and environmental outcomes (e.g. Duncan & Weiss, 1978; Dutton & Duncan, 1981);

4. Institutionalised experience - learning curve effect through size and bureaucratic procedures. Learning is an accumulation of efficiencies through experience and tradition.

The concept of organisational learning has replaced the concept of organisational culture in recent years as a recipe for success. Fortune magazine stated "Forget your old tired ideas about leadership. The most successful corporation of the 1990s will be something called a learning organisation". This is developed by Senge (1990) as "the organisations that will truly excel in the future will be organisations that discover how to tap people's commitment and capacity to learn at all levels in an organisation." Senge believes learning organisations need five components or disciplines, these are:

Systems Thinking, Personal Mastery, Building Shared Vision, Team Learning and Mental Models. He states that for an organisation to truly learn these five disciplines need to be integrated via the use of systems thinking to fuse them into coherent practice. Senge (1990) discriminates between adaptive learning (coping with change) and generative learning, which is about creating and developing new ways of looking at the world. The assertion being that organisations need to focus on generative learning.

Huber (1991) reviewed the literature on this topic and believes that organisational learning is characterised by a combination of four processes:

1. Knowledge acquisition - the process by which knowledge is acquired;

2. Information distribution - the process by which information from different sources is shared, thereby leading to new information or understanding;

3. Information interpretation - the process by which distributed information is given one or more commonly understood interpretations;

4. Organisation memorisation - the means by which knowledge is stored for future use, and the ways in which stored knowledge is used.

Within the definitions of organisational learning it is both explicitly and implicitly stated that individuals and their knowledge need to be utilised and made available for the organisation as a whole. A development of this argument is the concept of organisational memory which refers to the stored information from an organisation's history that can be brought to bear on present decisions (Walsh & Ungston, 1991). When people leave an organisation, without mechanisms for transferring personal experience among decision-makers, the lessons of history are lost, knowledge disappears and the organisation's effectiveness and productivity decrease (Leavitt & March, 1988; Carley, 1992). Moreover the non-anticipation of future needs results in great amount of information not being stored, or if it is stored not being easily retrieved (Huber, 1990).

### 2.4.2 Theories of Action

These "Theories of Action" are the name given by Argyris & Schon (1996) to conceptualise organisational learning. Theories of Action is the representation of knowledge embedded within organisations and can be systems of beliefs that underlie action, prototypes from which actions are derived, or as procedural prescriptions for action, as well as the values which govern the choice of strategy and the assumptions upon which they are based. Argyris and Schon (1996) therefore define a theory of

action in terms of a particular situation, S, a particular consequence, C, and an action strategy, A, for achieving consequence C in situation S. Hence:

*If you intend to produce consequence C in situation S, then do A*

This theory is based on two assumptions. The first being that consequence C is desirable as an endpoint, and the second that the model of the world is plausible so that action A will produce consequence C in situation S. The theory of action can take two forms. The 'espoused theory' is the theory of action which is advanced to explain or justify a given pattern of activity, whilst 'theory-in-use' is the theory of action which is implicit in the performance of that pattern of activity. So theory-in-use is constructed from observation of the pattern of actions as opposed to what people say. In organisations, theories of use can be derived from observation of organisational behaviour, as their behaviour is governed by formal and informal rules for collective decision, delegation and membership.

An organisation's instrumental theory-in-use includes norms for corporate performance (e.g. margin of profit or return on investment), strategies for achieving organisational values (e.g. strategies of plant location or selection of manufacturing technology), and assumptions that bind strategies and values together (e.g. the assumption that a high rate of return on investment relies on the continual introduction of new technologies). So an instrumental theory-of-action includes in its scope communication and control, allocating resources to particular functions, rewarding or punishing individuals, constructing career ladders and regulating the rates at which individuals climb them, and recruiting new members and instructing them in the ways of the organisation. In many respects the organisational theory-in-use shares similar characteristics, however it is reflective of organisational philosophy as opposed to a collective viewpoint. These theories-in-use may be tacit rather than explicit and they may not match the organisation's espoused theory. For example an organisation's formal documentation, including organisation charts, policy statements, and job descriptions will be incongruent with an organisation's actual patterns of activity. The key feature of this theory then is basically incongruence between what's said and what is actually done.

Argyris & Schon (1996) define organisational learning thus:

> "Organisational learning occurs when individuals within an organisation experience a problematic situation and inquire into it on the organisations' behalf. They experience a surprising mismatch between expected and actual results of action and respond to that mismatch through a process of thought and further action that leads them to modify their images of organisation or their understandings of organisational phenomena and to restructure their activities so as to bring outcomes and expectations into line, thereby changing

> organisational theory-in-use. In order to become organisational, the learning that results from organisational inquiry must become embedded in the images of organisation held in its members' minds and/or in the epistemological artefacts (the maps, memories, and programs) embedded in the organisational environment."

For organisational inquiry to qualify as organisational learning a change in the organisational theory-in-use must occur. Argyris (1988) states that learning occurs when an organisation achieves what is intended (i.e. a match between a design for action and the actual outcome), and when a mismatch between intention and outcome is identified and corrected. Organisations do not perform the behaviour that produces the learning, it is individuals acting as agents of organisations who produce the behaviour that leads to learning. Furthermore Argyris (1988, 1994, 1996) found that theories-in-use differ from espoused theory, and that most theories-in-use have the same set of four governing variables. Governing variables are the preferred states that individual's strive to satisfy when they are acting (not the underlying beliefs or values). These four variables governing behaviour are:

- the idea of remaining in unilateral control;
- to maximise winning and minimise losing;
- to suppress negative feelings;
- to be rational.

The purpose of the strategy is to avoid vulnerability, risk, embarrassment, and the appearance of incompetence, so accompanying behavioural strategies would be to advocate your views without encouraging enquiry, and to avoid upsetting others and making them defensive. Organisational learning is represented below in Figure One in the form of single and double loop learning.

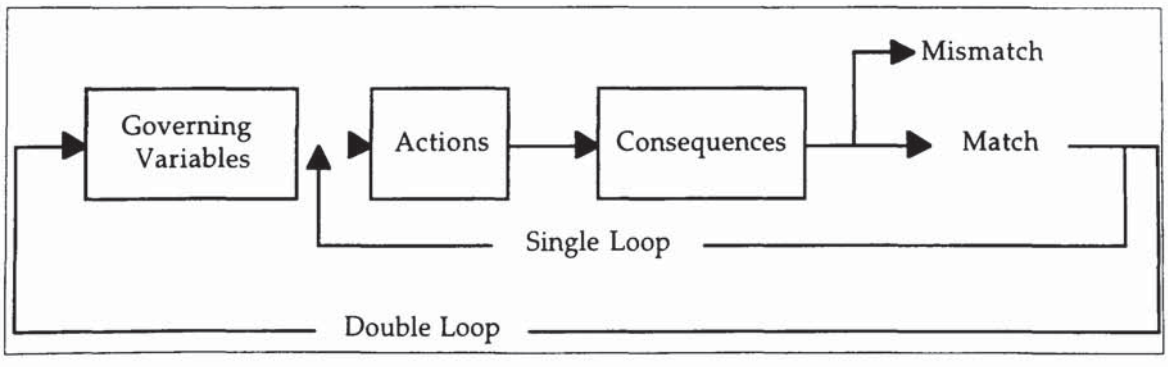


*Figure One: Single- and Double-loop learning*

The single loop mode of operating maintains existing assumptions and sets of rules and serves at each point of change to detect or correct errors only within a given frame of reference. Hence it emphasises structural divisions, local goals and suppressed, restricted or filtered information, so there is no incentive to cross boundaries, to share information or brainstorm. It becomes a self-sealing culture and believes in one right answer. Single-loop learning is where matches are created, or when mismatches are corrected by changing actions. Instrumental learning that changes strategies of action or assumptions underlying strategies in ways that leave the values of a theory of action unchanged. Double-loop learning is learning that results in a change in the values of theory-in-use, as well as strategies and assumptions. Hence double-loop learning occurs when mismatches are corrected by first examining and altering the governing variables and then the actions.

### 2.4.3 Factors affecting organisational learning

Argyris (1988) has conducted research into many organisations to investigate reasons for organisations failing to produce double loop learning. He distinguishes between conditions that enhance the probability of error and those that enhance the probability of learning. These conditions are shown on Table Two, below:

| **Conditions enhancing error** | **Conditions enhancing learning** |
|---|---|
| Information is:<br><br>vague<br>unclear<br>inconsistent<br>incongruent<br>scattered | Information is:<br><br>concrete<br>clear<br>consistent<br>congruent<br>available |

*Table Two: Organisational Learning Conditions*

When individuals act according to their theory-in-use they tend to create conditions of undiscussability, self-fulfilling prophecies, self-sealing processes and escalating error. These conditions then reinforce vagueness, lack of clarity, inconsistency and incongruity, which reinforces their theory-in-use (i.e. people strive to be in unilateral control, to minimise losing and maximise winning, etc.) These conditions result in win/lose groups and competitiveness dominates over cooperation, mistrust overcomes trust and unquestioned obedience replaces informed dissent. This effect is exacerbated when the concept of organisational layers is taken into account. This is the principle that organisations consist of an aggregation of departments and groups. Each of these organisational layers have their own interests, intentions, values and theories-in-use;

and from the point of view of each entity, the rest of the organisation is the environment.

An organisation's learning system comprises of organisational structures that channel organisational inquiry, and an organisation's behavioural world which facilitates or inhibits organisational inquiry (Argyris & Schon, 1996). Both features are necessary for organisational inquiry to become successful organisational learning. Organisational structures are:

- channels of communication (forums for discussion and debate, formal and informal patterns of interaction);
- information systems, including their media and technologies (e.g. computer);
- the spatial environment of the organisation insofar as it influences communication patterns;
- procedures and routines that guide individual and interactive inquiry; and
- systems of incentives that influence the will to inquire.

These structures are defined as organisational enablers by Argyris and Schon (1996). The "behavioural world" of the organisation are the qualities, meanings and feelings that habitually condition patterns of interaction among individuals within the organisation in such a way as to affect organisational inquiry. The behavioural world is affected by the degree to which interaction patterns are hostile or friendly, intimate or distant, open or closed, flexible or rigid, competitive or cooperative, risk-seeking or risk averse, error-embracing or error-avoiding, productive or defensive.

However they raise four questions:

- levels of aggregation at what level of aggregation - individual, group, organisation can productive learning occur;
- what productive learning means, that is single and double loop learning and the difference between tactical and strategic;
- blockages to organisational learning in real world organisations cognitive limitations, organisational politics;

- how to enhance organisational capacity for learning e.g. organisational enablers - structures, information, incentives etc.

### 2.4.4 Summary of Organisational learning

As stated earlier in this section it is imperative for organisations to learn for them to be successful both economically and for safety. Hence the underlying theory of organisational learning needs to be considered to see the extent to which an organisation displays these characteristics and hence to devise recommendations for the organisation to resolve these. In the following chapter the importance of organisational learning for a good safety culture and effective safety performance is discussed.

## 2.5 ORGANISATIONAL LEARNING & CULTURE

Schein (1992) links his definition of an organisational culture with that of a learning organisation. Schein argues that in a world of turbulent change, organisations have to learn ever faster, which calls for a learning culture that functions as 'a perpetual learning system'. The primary task of a leader in contemporary organisations is to create and sustain such a culture, which then, especially in mature organisations, feeds back to shape the leader's own assumptions.

Schein defines leadership as "the attitude and motivation to examine and manage culture." As stated previously organisational culture is a pattern of basic assumptions shared by the group, acquired by solving problems of adaptation and integration, working "well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems." In organisational learning, basic assumptions shift in the heads of the group members. The job of a learning leader is to promote such shifts by helping the organisation's members to "achieve some degree of insight and develop motivation to change."

A learning leader must assess the adequacy of their organisation's culture, detect its dysfunctionality, and promote its transformation, first by making their own basic assumptions into 'learning assumptions' and then by fostering such assumptions in the culture of their organisation. Among the most important learning assumptions: people want to contribute and can be trusted to do so; one should advocate one's own not knowing, becoming a learner and trying to get others to do likewise, thereby diffusing responsibility for learning so that the process of learning ultimately becomes part of the culture. Leaders can foster a learning culture by envisioning it and communicating the

vision, by rewarding those pockets in an organisation that represent the desired assumptions, and by fostering their creation through cultural diversity.

To reconcile the inconsistencies of managing a culture (as usually organisational cultures are seen as growing up and evolving, rather than as an object of direct control), stages of a lifecycle of a culture are referred to. Hence Schein believes that learning leaders must look at themselves and their own mental models and assumptions prior to taking actions to change the culture. Schein however does not refer to the limits of controllability of a culture, but focuses on the notion of "cultural humility", which is that culture is affected by forces outside the control of the leader.

## 2.6 CONCLUSIONS ON ORGANISATIONAL THEORY

These basic management concepts have been discussed at a fundamental level to gain an understanding of what they are, how they develop and the key points concerning the topics of organisational communication, organisational culture and organisational learning. The following chapter will describe these concepts as they relate to the notion of safety. It is proposed to discuss the role of communication in developing a safety culture and facilitating organisational learning.

# CHAPTER THREE

## *Safety Culture and its Management (Literature Review cont.)*

The previous chapter provided a summary of current organisational theories and practices with regards to the concepts of organisational learning and organisational culture. The intent of this chapter is to link these principles to the concept of safety culture and safety management.

## 3.1 INTRODUCTION

Increasingly investigators of large scale system failures talk of the critical role played by human agency in their causation (Turner, 1978; Perrow, 1983, 1984; Kletz, 1988). The causes are often described solely in the catch-all phrase of human error, and focus on human responsibility and culpability. Responses to this attribution of causation have involved human factors specialists and ergonomists attempting to design systems to pre-empt and control these types of error. Both the attribution and responses to human error only consider the simple interaction between a particular technology and individual actions, and therefore fail to consider the various stages of a technological system's life cycle. People, their organisation and culture are all involved in a technological system's life cycle (Pidgeon, 1993).

Traditional approaches to accident analysis have recognised the critical role of human error and the prevention of such errors has been approached from the perspective of human factors psychology and ergonomics. Jones (1988) points out that human error is always presented as worker error: errors by management or technical personnel are merely 'technical errors' - unavoidable oversights or mistakes which are inevitable in the development of any technology. Attribution of failure to the worker holds a subtext of blame, hence workers are either stupid, careless, or bored.

Evidence from major incidents in the 1980s, for example Clapham Junction Railway crash, the fire at Kings Cross Underground station and the capsizing of the Herald of Free Enterprise have shown that a significant proportion of their causes are organisational in origin (e.g. Reason, 1987). These investigations implicated human error on the part of operators, designers and managers (Rasmussen, 1990). However

the need for a 'scape-goat' to carry the blame for an unwanted outcome has often led to singling out first-line operator failures as the primary cause of accidents. Increasingly it is realised that a first line operator acts within the organisational infrastructure including the operational procedures, which are designed by management, which the operators have had no influence on, but have to obey (Edsberg, 1985; Jones, 1988). The work environment is a dynamic system composed of the physical characteristics (buildings, plant and equipment); the organisational structure and policies, and the aggregate skills, perceptions and attitudes of employees. Therefore it is imperative to consider the whole dynamic situation, including all of its components to ensure its integrity and safety.

## 3.2 ACCIDENTS

### 3.2.1 Accident Causation

An accident can be described as "an unexpected, unplanned event in a sequence of events, that occurs through a combination of causes; it results in physical harm (injury or disease) to an individual, damage to property, a near-miss, a loss, or any combination of these effects" (Ridley, 1986). This description has two distinct parts, a description of the cause and a description of the effect. In the following section the term incident and accident are used interchangeably. A number of theories about the causes of accidents exist. These include the Management Oversight and Risk Tree (Johnson, 1980); Multicausality (Reason, 1990a); Human Factors Model (Petersen, 1984); Trigger Events (Turner, 1978); and Combined Causation Model (Hale & Glendon, 1987). This thesis is primarily concerned with a human factors approach to safety and it is therefore considered appropriate to discuss those approaches which emphasise the role of the individual in a work system, and the effects of systemic factors.

### 3.2.2 Multicausality

Reason (1990a) states that accidents happen as a result of chance concatenation of events, each of which is necessary but not sufficient to cause an accident. Hence multicausality considers accident causation as a sequence where there is usually more than one cause. Each causal factor can be an unsafe act, condition or situation. And each causal factor can have sub-causes, and hence an accident investigation should involve following each branch back to identify its root cause. This type of analysis is known as 'fault tree analysis'. The theory of multicausation is that the contributing causes combine together in a random fashion resulting in an accident. During accident

investigations, there is a need to identify as many of these causes as possible. The idea of multicausality is central to the understanding of accidents, and the idea of identifying each root cause parallels the need proposed by Roberts and Rousseau (1989) to identify and obtain as much information about accidents causes. This is necessary to identify preventive mechanisms to be subsequently identified to prevent an incident's reoccurrence.

The idea of multicausality is central to the theories of Turner (1978) and Reason (1990). Causes of incidents are categorised according to the immediacy of their effects on the occurrence of an incident.

### 3.2.3 Trigger Events, Latent and Active Failures

Reason (1990a), Turner (1978) and Perrow (1984) in case studies of accidents have shown that major disasters in complex systems are rarely if ever caused by any one factor. Instead they arise due to a concatenation of several diverse events, each one necessary but singly insufficient (i.e. the concept of multicausality). Turner (1978) performed a sociological analysis of a wide range of major disasters and found that a number of undesirable events contribute to an 'incubation' period. This incubation period can often be measured in years and is the period prior to an incident occurring where these undesirable events and system states remain dormant in the system, until a trigger event activates them and an incident occurs. Turner (1978) considers that "disaster equals energy plus misinformation". So if we consider organisations as designed to order, structure and manipulate their environment then when information is faulty these organising processes can result in a good organisation organising to produce a bad effect. Turner's model focuses on informational difficulties associated with attempts of individuals and organisations to deal with uncertain and ill-defined safety problems. Pidgeon (1988) states that an unnoticed situation develops, which is counter to the accepted beliefs about hazards, safety norms and procedures. Eventually the situation is revealed when the onset of disaster is precipitated by a trigger event, or a slightly abnormal operating condition (Turner, 1978; Pidgeon, 1988; Smith, 1992). This theory proposed by Turner (1978) emphasises the importance of near misses and the implications these have on the system, as a trigger event is all that separates a near miss from an accident.

Similar to the notion of an incubation period and trigger events is the dichotomy identified by Reason (1990a, 1990b). Errors are 'active' or 'latent'. Active errors are associated with the performance of 'front line' operators within a complex system for example; pilots, air traffic controllers and control room crews. The effects of this error type are immediate on the system. Latent errors, however are errors made by designers,

decision-makers, maintenance and construction workers, which are remote in time and place from the direct control interface (Schurman & Reason, 1991; Reason, 1990b). These latent errors can lie dormant and undetected in the system for a long time, only becoming evident when they combine with other factors (e.g. the active failures) to breach the system's defences. These theories of accident causation emphasise organisational factors, and the importance of a safety culture to identify and prevent trigger events or active failures.

In the past, reliability analyses and accident investigations have focused on operator error and equipment failure. However, whilst operators can, and do make errors in their attempts to recover from an out-of-tolerance system, many of the root-causes of an emergency were present in the system before these active errors were committed. It is recognised that latent failures are created by poor design, incorrect installation of technical systems, faulty maintenance and bad management decisions. So an individual's involvement in the accident chain is "usually that of adding the final garnish to a lethal brew whose ingredients have already been long in the cooking" (Reason, 1990a). Evidence therefore suggests that latent errors and organisational failures contribute significantly to the causation of incidents and hence they need to be considered in the safety management of an organisation.

The incident at Bhopal is a clear example where latent failures contributed to the causation of the incident, and originally individuals were held responsible for the incident. However further investigation and consideration of the causes of Bhopal reveal deeper issues relating to Union Carbide's perspectives and contribution to incident:

> "it was widely believed that the slum community surrounding the plant simply did not have the capacity to understand the complexities of chemical production and realistically appraise the risks."
>
> Seeger (1991)

There was paternalistic condescension on the part of Union Carbide, which led the uneducated community to accept on faith whatever they were told, and they were told very little, which resulted in a fatalistic attitude towards safety practices. Consequently Union Carbide were identified as primarily at fault, and that system design, poor communication and ineffective safety practices resulted in the accident.

### 3.2.4 Implications of Accident Investigations

Many authors state that between 60-80% of accidents are due to human error and active failures (e.g. In the Aviation Industry 70% of accidents are due to crew error - Watson (1985); Williams and Wiley (1985) attribute between 60% and 80% of all

major accident causes to human error). As discussed earlier there is an increasing realisation that organisational and systemic failures also have a role in the causation of accidents. Whilst human error is blamed as the major causes of accidents, this in part may be politically motivated in that it moves the responsibility and need for action from the management and shareholders to the workforce (Jones, 1988). So management and shareholders do not have to take responsibility an accident if others can be blamed. So accident investigations are controlled by pragmatic, subjective 'stop-rules' (Rasmussen, 1990) which depend on the aim of the analysis, i.e., whether it is to explain the incident, to allocate responsibility and/or blame, or to identify system improvements to avoid future accidents. The latter alternative is the stop-rule which gleans most productive information and will identify potential causal factors including plant design, individuals and the formal safety management system, and is fundamental for effective organisational learning.

Following a realisation by higher management of organisations that they could be prosecuted for corporate manslaughter responsibilities towards health and safety now have greater priority. The concept of corporate governance is that organisations need to respond concurrently to external environment institutionalising factors as well as internal (or organisation) institutionalising factors. Organisations manage safety by balancing the tensions derived from these two sources in order to meet both societal and corporate goals. Recent concerns with corporate governance have addressed the respective roles and responsibilities of the corporate board and management team. The corporate board of directors has been described as responsible for handling the environmental institutionalising factors through the development of corporate strategy, while the management team is responsible for addressing organisational factors by carrying out the directions of the board in the day-to-day operations of the organisation. Consequently there is a philosophical move towards making ethical decisions in organisations and a realisation of the impact of corporate management strategy on the operation and running of an organisation. This is consistent with approaches towards organisational culture, and safety culture, in that its a recognition of the higher management's responsibilities and the subsequent effect of their decisions on actions and organisational behaviour.

Johnson (1991) argues that an examination beyond the surface symptoms of an accident or incident will invariably reveal one or more failures or contributory weaknesses deep within the system; but these will only be identified if an investigation looks. For example an atypical case was an American pilot's union demanding a second investigation of the crash of a DC-10 into a mountain on a clear day in Antarctica. The findings resulted in a reversal of the conclusions from the original

inquiry. Instead of finding of crew error, the airline was considered at fault. It was discovered that the flight computer course had been changed without notifying the captain. In addition, the configuration of the landscape under the new course was similar to that of the old, and a dry air 'white-out' made the mountain ahead invisible (Mahon, 1981). This example exemplifies the way that the catch-all phrase 'human error' is used to shift the responsibility for an accident away from the true causes, and that unless an investigation looks beyond the surface causes the full story of the incident will not be identified.

There are many qualitatively different types of behavioural causes of disasters (Pidgeon & Turner, 1986) which range from simple individual errors such as slips, lapses, mistakes and faulty decision-making, to those associated with small group social arrangements - involving communication errors as well as the failings of interpretation of evidence; through to those involving systemic organisational or management issues. Attempts to mitigate all types of behavioural causes of disasters, including violations must be made. Consideration of organisational safety culture within an incident investigation as a potential cause of incidents should also be made.

## 3.3 ORGANISATIONAL APPROACHES TO ACCIDENTS

### 3.3.1 High Reliability Organisations

This section will consider the theory developed by researchers of why certain organisations remain safe. A research team in the United States have conducted detailed case studies into what they call "reliability-enhancing organisations" (or High Reliability Organisations (HROs)). These organisations each have potential for making operational errors that can result in catastrophe as they all operate complex and potentially hazardous technologies. Their viewpoint was to look at these organisations to investigate the characteristics of these organisations, compared to "disaster-prone 'garden variety' organisations" (Roberts, 1993). Their research team collected data over an extended period of time using a variety of techniques and the researchers state that they were like 'traditional cultural anthropologists' due to their continual involvement with the organisation and its tasks (Rochlin, 1993). They considered this necessary to understand these organisations to ascertain their internal dynamics and structure (Rochlin, 1993).

Their research identified some organisational characteristics, which they believe set are peculiar to these organisations. They were defined by Rochlin (1993) as:

1. an assumption that errors are omnipresent and insidious, and that external vigilance is the price of success;

2. a parallel assumption that the sources of error are dynamic, not static, so that monitoring mechanisms themselves must be constantly renewed and reinvigorated;

3. as a result, the operational assumption that the operating environment is a constant source of threat, requiring constant vigilance, even and especially at times when things seem to be going well;

4. maintenance of redundant modes of problem solving at the operational level and resistance to pressure to resolve or rationalise the process by adopting a single best approach;

5. the creation, maintenance and exercise of multiple simultaneous informal, organisational structures adapted to contingencies (structural variation according to the nature of the problem) (Rochlin, 1989; Roberts, 1992);

6. an organisational commitment to anticipatory as well as reactive modes of dealing with real and potential problems;

7. a relative empowerment of organisational units, dedicated to searching for incipient or latent error (Reason, 1990a);

8. the inability or unwillingness to test the boundaries of reliability, which means that trial and error modes become secondary and contingent rather than primary (Schulman, 1993);

9. the absence of 'stopping rules' for self improvement and self regulation, as long as organisational resources and time remain available, so that additional information is always cost effective at the margin as a means of controlling and bounding uncertainties (Schulman, 1993);

10. a respect for formal regulations and codes and 'going by the book' - extended with accepted standard operating procedures based on tradition;

11. acceptance of the proposition that even if a complete formal history and analysis were available, the task of actively maintaining performance and searching for error would only be simplified, and not removed or reduced in importance.

Their findings from these organisations suggest a causal link between safety and organisational structures, forms, beliefs and cultures, whose characterisation is the

basis of their studies ( a summary of their research is available in Roberts, 1993). Their viewpoint is therefore that hazardous technologies can be managed safely with intelligent organisational design and management. Wildavsky (1988) contributed to the concept of HROs with the development of his theory "Searching for Safety". His theory is that if these two universal strategies are used then safety will be achieved. The strategies for improving safety are:

- anticipation: efforts to predict and prevent potential dangers from arising before they've occurred;
- resilience: efforts to cope with dangers once they are manifest.

Four critical factors are identified as essential for HROs, these are:

**(I) Leadership Safety Objectives**

Reliability and safety must be held as a primary objective by both political leaders and heads of organisations. So there is a move from short term efficiency towards safety. The leadership commitment is essential due to the resource demands in terms of redundancy within an organisation and the high level of training required. As Roberts (1990) states when organisations cut corners on either of these issues, disaster is likely to occur.

Further HROs require "very clear and well agreed upon operational goals", so organisational leaders must place emphasis on high reliability and safety to communicate this objective clearly and consistently the organisation. Structures for briefing this objective must be in place and effective in an organisation to "assure that there is agreement about organisational mission" by all members of the organisation (LaPorte and Consolini, 1991).

**(II) The Need for Redundancy**

This relates to the idea that humans are fallible, and redundancy is the answer to Von Neumann's paradox of building "reliable systems from unreliable parts". By providing redundancy in the form of multiple and independent channels of communication, decision-making and implementation can produce a highly reliable overall system, even if each component is subject to error. So in Bendor's terms "duplication is a substitute for perfect parts" (1985).

**(III) Decentralisation, Culture and Continuity**

These strategies are intended to avoid stressing redundant systems beyond capacity. Decentralisation of decision making is considered essential in HROs in order to permit rapid and appropriate responses to decisions to dangers by the individuals closest to the problems at hand. This concept was proposed by Wildavsky at a microlevel for operator discretion and was identified in the research by the Berkeley team (e.g. Roberts, 1993).

Another operations management factor is the idea of a 'culture of reliability'. Within HROs, the culture requires people to cope with unexpected eventualities, and the HRO theorists state that this can be achieved by recruiting, socialising and training personnel to maintain a culture emphasising safety and reliability. This culture will enable lower level personnel, even when acting independently to behave similarly and to make operational decisions that are acceptable to higher authority.

The final element is the maintenance of continuous operations and training. The philosophy behind this is a process of on-the-job improvements, frequent and realistic simulation of emergencies, and challenging work loads.

**(IV) Organisational Learning**

The final factor out of these four critical factors is a strong capability of these organisations to learn. This is displayed through:

a. Adjusting its procedures and routines over time, learning through a process of trial and error which activities promote safety and which do not. Or, as Wildavsky (1988) states "without trials there can be no new errors; but without these errors, there is also less new learning".

b. A second strategy involves the use of simulations and anticipation and imagination of trials and errors. Hence risk analyses are used to imagine potential operator and design errors, to develop fault trees, discover hidden failure modes and to identify technical solutions to the problems

Fundamentally the theorists supporting the notion of High Reliability Organisations believe that highly hazardous and technical environments can avoid accident and remain safe and reliable through wise design and management techniques. The philosophy is that by building enough redundancy into a system, and having a strong organisational culture then hazardous technologies can be safely controlled.

The HRO theorists view successful hazardous organisations as reasonably rational actors: which have consistent and clear goals and can therefore learn how to maximise these objectives over time. However as March (1981) states

> "as long as we assume that organisation's have goals and those goals have some classical properties of stability, precision and consistency, we can treat an organisation as some kind of rational actor. But organisations do not have simple, consistent preference functions. They exhibit internal conflicts over preferences. Once such conflict is noted, it is natural to shift from a metaphor of problem-solving to a more political vision."

The following section describes the concept of normal accidents and is based on natural open systems.

### 3.3.2 Normal Accidents

This philosophy considers organisations as "natural open systems". 'Natural' refers to organisations which pursue goals of narrow self interest, such as their own security and survival and not just their official goals, concerning profit, production and safety. 'Open' refers to organisations that are constantly interacting with the outside environment, both influencing and being influenced by social and political forces. March and his colleagues Cohen and Olson developed a model of organisational behaviour known as the 'garbage can model' which seeks to explain how complex organisations make decisions (e.g. March, 1988). In the model a decision is an outcome of the interplay between problems, solutions, participants and choices, all of which arrive relatively independent of each other. Their focus is on organisations that do not behave rationally and the focus is more political where "solutions" are actively looking for "problems" to attach themselves to, "problems" are ill-defined and often unrecognised, and participants have limited attention, shifting allegiance and uncertain intentions. This complex mixture is often haphazardly dumped together at choice opportunities, such as budget conferences or board of directors meetings where the organisation is expected to produce behaviour that can be called a decision. These meetings or encounters are the garbage can from the model's title.

This 'garbage can model' was the source of a theory developed by Perrow called 'Normal Accidents'. Perrow (1977) stated that

> "complex social systems are greatly influenced by sheer chance, accident and luck; that most decisions are very ambiguous, preference orderings are incoherent and unstable, efforts at communication understanding are very loosely connected and most attempts at social control are clumsy and unpredictable."

These ideas were applied to a number of hazardous industries, including commercial airlines, nuclear power plants and the petrochemical industry and led him to conclude

that "serious accidents are inevitable, no matter how hard we try to avoid them" (Perrow, 1984). The theory of normal accidents is based on the characteristics of organisations operating dangerous technologies - these being 'interactive complexity' and 'tight coupling'. Complex interactions according to Perrow (1984) are "those of unfamiliar sequences, unplanned or unexpected sequences and either not visible or not immediately comprehensible". This is considered as a continuum which moves to linear interactions, which are "those in expected and familiar production or maintenance sequences, and those that are quite visible even if unplanned". So interactive complexity will increase the likelihood of accidents whilst tight coupling is necessary to produce escalation to a full blown normal accident. The degree of coupling in an organisation affects its ability to recover from small scale failures. Tightly coupled organisations have more time dependent processes; the way a product is made is invariant; there is little slack and safety devices are built into the organisation, leaving little room for improvisation, especially when the other features of a tightly coupled organisation are present. So the crux of Perrow's thesis lies in the fact that if an organisation has many interactions, then unanticipated and common-mode failures are inevitable, and if that system is also tightly coupled, then it will be very difficult to prevent it escalating into a major accident.

Perrow (1984) from his analysis of high risk systems argued for 'normal accidents'. These are the rare, but inevitable outcomes of complex systems. So highly complex systems run the risk of strange, unexpected and unforeseen interactions between various constituents of a system. These systems are sometimes tightly coupled, leaving little time for recovery from failure, with little slack in resources or fortuitous safety devices, so that failures are not limited to parts, but can bring the whole system down. Rasmussen (1982) confirms that, "the typical accident in an installation of balanced design is not caused by only one simple design fault or human error; on the contrary major events will depend on the complex chain of events including equipment faults, latent risky conditions from repair and modifications as well as human mistakes and decision errors."

### 3.3.3 Sagan's Critique of these Viewpoints

These two viewpoints (Normal Accidents and HRO) were taken and compared to a series of case studies and data from the US nuclear forces by Sagan (1993). Through a series of historical examples the key features of HROs and Normal Accidents were evaluated. The evidence suggests that the theory of normal accidents reflects reality, and that good fortune as opposed to good design that prevented many near misses developing into disasters. However Sagan states that work on HROs and their advice

should be followed to provide enhanced safety, whilst accepting their limitations in terms of strategies backfiring. Sagan's book closes with the following paragraph:

> "In retrospect it should be acknowledged that while the military organisations controlling US nuclear forces during the Cold War performed this task with less success than we knew, they performed it with more success than we should have reasonably expected. The problems identified in this book were not the product of incompetent organisations. They reflect the inherent limits of safety. Recognition of that simple truth is the first and most important step towards a safer future."

Hence research on accidents and their causation must emphasise the importance of considering all causes of accidents and devise strategies to prevent them. This includes the provision of a system for the management of safety and a consideration of other organisational failings not related to the formal structure, for example the impact of an organisation's safety culture as well as acknowledgement that effective safety management systems are not infallible.

## 3.4 SAFETY MANAGEMENT

Safety Management involves the prevention or detection of latent and active failures in hazard identification, risk assessment, control and monitoring (HSC, 1993). As Reason (1990b) states, "the avoidance of latent failures is the essential foundation of safety management and involves the identification of hazards, assessment of risks and selecting, implementing and monitoring preventive actions". These actions form the foundation of safe personal behaviour and the avoidance of active and latent failures.

A strong safety management system is crucial to the prevention of accidents, and should be part of any management system. The management of safety should embrace all systems and procedures which effect an organisation's ability to operate safely; and safety audits exist to check the functional completeness and quality of these systems. Safety audits should gauge whether systems and working methods are sufficiently robust to cope with unfamiliar events, and whether adequate steps have been taken to prepare personnel for such eventualities (Bellamy, 1993). Audits by themselves do not actively impact system safety unless as a Hawthorne-type effect (see Canter, 1989). Hale, Gerlings, Swuste & Heimplaetzer (1991) consider that the

> "ultimate goal of any safety management system is to influence and manage the behaviour of those in the company who can predict, prevent and control hazards in designing and operating the company's activities. That behaviour is conditioned by the day-to-day experiences of those people, but also by the policy and rules in the organisation in which they work and by the rules which they themselves have formulated and learned."

So an effective safety management system requires a formal system comprised of policies and procedures, whilst individuals function safely within this framework. This is consistent with the philosophy that safety culture is a set of guiding principles regulating people's behaviour, and that this codex is provided through a complex interaction between the formal safety management system, the policy and rules, and an individual's governing rules and morals (adapted from Kunda, 1990).

HSC (1993) describe essential characteristics for working safely in a dangerous environment. These characteristics involve individuals with appropriate knowledge and skills, knowing the rules, and be motivated, to:

- identify the hazards;
- assess the priority and importance of hazards;
- recognise and accept personal responsibility for dealing with the hazards in an appropriate way;
- have appropriate knowledge about what should be done; and
- have the skills to carry out the appropriate necessary sequence of preventive actions, including monitoring the adequacy of the actions, and taking further corrective action.

These recommendations for working safely in a dangerous environment are directly adapted from the Hale and Glendon (1987) model. Key components of any safety management system should be the safety policy and planning, organisation and communication, hazard planning, and the monitoring and review of safety performance.

The British Standards Institute have published a standard BS 8800 titled "Guide to occupational health and safety management systems" (BSI, 1996). The guide is based on the "general principles of good management and are designed to enable the integration of occupational health and safety management (OH&S) within an overall management system"(ibid.). Their guide provides a detailed approach based on the HSE's guidance on "Successful Health and Safety Management" for the development of occupational safety and health programmes. It is designed for use by all organisations almost regardless of size and activities, however the guide is not certificatable. The document is supported by five annexes which provide detailed guidance for the implementation of the various aspects of the standard, these are:

1. Organising

2. Planning & Implementing
3. Risk assessment
4. Measuring Performance
5. Audit

The emphasis therefore is on developing systems to identify hazards and implement systems to ensure their control. Hence procedures and systems are necessary components of an effective safety programme, however the role of the individual is also important, as their safe behaviour is the ultimate goal. Whilst an organisation's safety policy, plans and monitoring arrangements might appear on paper to be well considered and comprehensive, it is important that opinions on the shop floor are considered to ensure that false perceptions and scepticism do not exist at management and shop-floor levels (HSC, 1993). Consequently the perceptions and beliefs that people hold about safety must be considered, in addition to auditing the safety plans. It is proposed that organisational safety culture determines an organisation's commitment to, and the style and proficiency of, an organisation's health and safety management system.

A number of authors (e.g. Turner, 1978, Perrow, 1984) propose that the preconditions of disaster are typically rooted in the social and organisational arrangements of the overall sociotechnical systems associated with large scale hazards. The term sociotechnical systems considers organisations as open systems which transform inputs into desired outputs (from Emery and Trist, 1960). They consist of technical and personnel subsystems, where technical subsystems define the tasks to be performed whilst the personnel subsystem prescribes the ways in which the tasks are performed. Thus an analysis of sociotechnical systems involves descriptions of both systems, the technical and the personnel and the interaction between these.

The view that the entire dynamic system needs to be considered is reinforced by Cohen (1977) who states:

> "Overall, this review (of technical and engineered safeguards) would suggest that the more distinguishable elements of successful safety performance rest largely on psychological or human factors considerations. Management commitment, aspects of interpersonal communications and interaction, early safety indoctrination and follow-up training, workforce stability, and personnel development and support programmes all fall in the psychological domain. While not belittling the importance of engineering approaches to accident prevention, the evidence here would argue for increased emphasis on non engineered measures."

Therefore it is essential that safety management systems including the rules and procedures, the technical safeguards and the attitudes and behaviours of the individuals within the system are considered as all the evidence suggests a move away from technical "fixes".

### 3.4.1 Why Safety Management is Important

Although humans are cited as causative factors (both Reason (1990a) and Turner (1978) cite active failures and trigger events) in the development of disasters they also provide the versatility to prevent incidents from occurring. It is therefore important to consider the role of the human within the system. However many complex sociotechnical systems do not allow individuals to have a role. As Bainbridge (1987) states, many work functions are automated with the aim of making a system safer and more efficient. However several authors argue that this efficiency is not attained e.g. Bainbridge (1987), Perrow (1983). This philosophy could be extended to include the degree of latitude available to individuals working within a safety management system framework. Perrow (1983) concludes that skill development, system comprehension and relief from tedium can result when procedures are not strictly followed, and that safety management systems enforce compliance and actively discourage violation. So present safety management systems do not take full account of the versatility of individuals within systems, and are designed to prevent autonomy.

Whiston and Eddershaw (1989) stated that work accidents happen by the actions of people, and that these are particularly influenced by management decisions and systems. Management set standards, are responsible and accountable for safe equipment, for procedures and for training. And whilst there has been much progress in getting the hardware of safety systems effective and reliable, management need to think systematically about the way people and their jobs are organised with respect to the process and the organisation. Change at board level is necessary, so that changes within the Safety management systems are integral and consistent with other management systems in the company. Safety management systems should be complementary to other management functions, and not be a 'bolt-on' extra (Cullen, 1992).

Perrow (1983) emphasises the importance of analysing the organisational context which structures the operator-machine environment. He further states that it is necessary to consider the way that mere 'things' - equipment, its layout, its ease of operation and maintenance- are shaped by organisational structure and top management interests, which in turn shape operator behaviour. Hence for a system to

remain safe the various components and their interactions need to be carefully considered and oriented towards safety.

### 3.4.2 Components of Safety Management Systems

This section considers the different essential components of a safety management system as proposed by a number of authors, including the HSE (1991), the ACSNI committee (HSC, 1993) and BSI (1996). The ACSNI committee (ibid.) state that it is essential to promote both safe conditions (i.e. the engineered safeguards, safe systems of work and well designed workplaces) and safe behaviour (i.e. the way that people behave in the workplace, their attitudes to procedures). Heinrich (1931), as cited in Heinrich, Petersen and Roos (1980), remarks that although "man failure causes the most accidents, mechanical guarding and engineering revision are nevertheless important factors in preventing the most accidents." Whilst the Robens committee (1972) emphasises the importance of the human and organisational factors in the organisation:

> "It is not to underrate the importance of physical safeguards to say that the preoccupation with the physical environment has tended to dominate this field, to the neglect of the equally important human and organisational factors such as the role of training ... the arrangements for monitoring safety performance ... or the influence of work systems on management behaviour."

Hence there is a need to manage the system to ensure that it remains safe, which requires the provision of a safe place of work, with safe systems of work to obtain the safe behaviour of the workforce i.e. an integrated framework. A number of authors propose mechanisms to achieve this.

Within an organisation there are many conflicting goals including safety goals, profit targets and production goals. For an organisation to function effectively individuals within the organisation should be clear about which objectives and goals take priority. Organisations need to have a climate which promotes staff commitment to health and safety, and which emphasises that deviation from corporate goals, at whatever level, is not acceptable.

A reference guide "Successful Health and Safety Management" was published (HSE, 1991) to assist all those concerned with safety management in organisations. The document attempts to show how the principles of effective health and safety management do not differ significantly from other management principles and philosophies. The necessary principles proposed are: policy; organising; planning and implementation; measuring; and auditing and reviewing performance. The approach roughly parallels the philosophy of Total Quality Management. The headings for the

safety management system advocated are: Policy and Planning; Organisation and Communication; Hazard Management; and Monitoring and Review. These are not substantially different from the recommendations of the Health and Safety Executive. A summary of these components of a safety management system are described below.

### *3.4.2.1 Policy*

A safety policy is an essential part of a safety management system, and it is specified within The Health and Safety at Work Act that a company must have a safety policy (HSE, 1974) . The policy should comply with legislation concerning hazards and be effectively used and considered in all business practice and decision-making. The policies must recognise that:

a. "health and safety can contribute to business performance by reducing costs incurred from accidents and incidents. Therefore performance is likely to be improved, profits higher and costs reduced by a reduction in incident occurrence;

b. a culture must be attained which supports risk control and which has the participation of the whole organisation;

c. the safety policy must be planned and implemented successfully to ensure effectiveness."

HSE (1991).

Hence the HSE (1991) in their recommendations for policy are emphasising the pecuniary aspects of a safety policy, focusing on aspects other than the safety benefits in its specifications. The ACSNI committee also recognise the role of the safety policy in the development of an organisational culture. They state that the success of the safety policy depends on the effectiveness of the plans to implement it, and the adequacy of the systems to communicate the policy and plans to organisational members. So the potential safety benefits of a policy are not realised unless a system exists for its implementation.

### *3.4.2.2 Organising*

This involves establishing responsibilities and relationships which promote a positive safety culture, and which ensures the implementation and continued development of the health and safety policy. Thus the Health and Safety Executive consider the promotion and achievement of a Safe Culture to be a goal of the safety management system. So the efficacy of the safety management system is judged by the culture type. Safety culture is considered by the HSE (1991) as four quadrants: Control, Co-operation, Communication and Competence. Control is secured by managers leading

by example, responsibilities being clearly allocated and adequate supervision, instruction and guidance being available for all safety tasks. With the overall goal being for individuals to be held accountable for their health and safety responsibilities, and to be motivated by systems of target setting and positive reinforcement to achieve a safe system.

Health and Safety should be a collaborative effort through the co-operation of employees in attaining safety goals and setting of performance standards, incentive schemes and corporate co-operation. There must be effective communication between all those concerned through the use of visible behaviour, written material, and face-to-face discussion to transmit the safety goals. The staff should also be competent and have the required skills to perform the tasks correctly; this can be attained through recruitment, selection, placement, transfer and training and the provision of adequate specialist advice. Hence an effective safety culture is achieved through the operation of a successful and fully integrated safety management system.

Organisational Policy is often considered essential within organisations as a method for communicating management's desires and expectations of the organisation and their commitment. This is of particular relevance with regards to safety policy, the CBI (1990) in their guide to developing a safety culture emphasise the need for policy statements to be effectively communicated to all employees, and that management must be seen to be fully committed to these policy statements. It is stated that for effective policy implementation that managers at all levels must incorporate health and safety responsibilities into their everyday responsibilities. This is consistent with Deming's fundamentals of quality (as cited by Chapman, Hertz & Feldman, 1992) that senior management must demonstrate their commitment to the workforce. So sufficient resources must be provided; decisions should not be made to optimise short term behaviour, but consider long term benefits, and management behaviour should be consistent with the quality culture.

### *3.4.2.3 Planning and Implementation*

Planning is essential for the successful implementation of a philosophy aimed at improving and attaining an effective safety management system. Health and safety objectives and performance standards need to be set and devised to promote a positive safety culture. These should cover the areas described by the HSE as components of a safety culture i.e. control, competence, communication and co-operation. Planning and implementation should consider hazard management, identify hazards, and determine, implement, measure and review control measures. The ACSNI committee (HSC, 1993) state that hazard management is an essential step, whereby

hazards must be identified, risks assessed, and control measures determined, implemented and measured and reviewed using a performance standard as a guide.

### *3.4.2.4 Measuring Performance*

Measuring performance is an essential aspect of maintaining and improving health and safety performance. It requires an active system which monitors the achievement of plans and the extent of compliance with standards (both internally and externally determined). Reactive systems are necessary to consider accidents, ill health and incidents to assess their impact on the current system; and in response methods should be identified to prevent previous accidents reoccurring by removing the causative factors or monitoring these factors. Both the active and reactive systems generate information on levels of performance and effective systems of reporting, investigating, recording and analysing data to support these systems.

### *3.4.2.5 Auditing and Reviewing Performance*

Auditing and Reviewing Performance is imperative to maximise learning and involves consideration of the routine operations within the organisation. It helps ensure that appropriate action is taken to control specific risks, and to improve overall health and safety performance, and to further develop their health and safety policies. Hence consideration of performance provides feedback and information on the efficacy of the safety management system at achieving its goals.

HSC (based on evidence presented by Ryan, 1991) state that employers should seek to monitor not only the outcomes of their safety management programmes, but also to monitor key performance indicators that have been found to predict the outcomes. There is also the need to audit compliance with safety procedures and the systems designed to achieve the outcomes.

Lees (1982) believes that 'hazard warning' is provided through monitoring certain precursors of past major incidents. A preliminary monitoring system involves determining and subsequently measuring certain indices of performance such as the number of work permits checked and found defective, the number of leaks, the percentage of operating procedures prepared and be up-to date. This system can then be improved using a systematic method involving worksheets to look at the critical features of each plant in relation to the containment of materials and control of process, and defining an appropriate monitoring programme. Frequency of actuation of critical alarms, alarms and trips tested, and recalibration of control instruments could be used as performance indicators as they provide indicators of how reliably the plant is operating.

The Health and Safety Executive state that if an organisation follows the steps described from policy through to auditing and reviewing performance then a safety culture will develop. This should lead to a reduction in accidents and incidents. Hence the goal of the document written by the Health and Safety Executive (HSE, 1991) is the development of a safe culture which motivates people to behave safely within a specified safety framework.

### 3.4.3 Quality and Safety

There is growing realisation that production efficiency is inextricably tied to both the safety and the quality of the production process (Deming, 1982). The HSE (1991) in their approach to safety management devise a system which has many parallels with the quality process, and in particular the Total Quality Management Philosophy. Smith and Larson (1991) show that highly successful industrial quality and safety management systems share a number of common organisational features related to employee participation in management decision-making, the regular utilisation of employees as important resources (people for problem-solving) and involving employees from the outset in the design, development and implementation of new company operations and programmes. Salazar (1989) and Whiston and Eddershaw (1989) provide examples of how Quality Management Approaches are directly applicable to safety management.

Accidents are an indication that the quality of safety is not up to the requisite standard, so they are considered as learning opportunities to prevent their reoccurrence. The costs of incidents and accidents can be counted from investigation costs, public liability claims, adverse publicity, loss of market share, insurance premiums, and hiring of replacement staff (Whiston and Eddershaw, 1989). A quality change is an empowering process, not a motivation process and involves a complete culture change. It is a long term process requiring constant and consistent determination accompanied by education (to achieve the desired behaviour) and followed by implementation to achieve the desired result. It is speculated that the development of this control system will have a positive effect on safety performance and improve the safety culture due to heightened awareness.

### 3.4.4 Summary of Safety Management Systems

A balanced approach towards safety management is required. This involves consideration of formal systems (e.g. permit to work systems, policy and procedures etc.) and the roles and responsibilities of individuals within the organisation. Optimising this balance depends on the commitment, competence and safety

awareness of differing groups of individuals, the degree and speed that individual attitudes and expertise can be modified, and the safety impact the system requirements have on individual's attitudes and behaviour (Ackroyd, 1992). A safety management system should be tailored to fit the safety challenges, individuals, statutory requirements and safety goals of a particular organisation. Perhaps the most effective way of monitoring and assessing the effectiveness of the safety management system is via Performance Outputs rather than detecting the presence of individual elements as audit tools do.

However these approaches to safety management do not consider the role of individual and group attitudes and perceptions towards the way that safety is managed within the organisation; and the impact of these upon safety. The safety management systems described by the HSE (1991) and the HSC (HSC, 1993) committee propose structure to achieve a safe system, and discuss the importance of a safe culture. The following section will describe how the safety culture of an organisation can effect and influence the efficacy of the safety management system. The influence can either be positive and improve safety through an increased awareness of safety; or negatively which decreases safety.

## 3.5 SAFETY CULTURE

The explicit and implicit goal of a safety management system is the development of a positive safety culture as defined by the HSE (1991). The interest in culture arose in response to a realisation that organisational structure (i.e. the roles and their relationships, rules and procedures) was limited in achieving an organisation's goals. Hence the formal systems should prevent accidents occurring, for example by prioritising resource allocation, assessing training needs, adopting risk assessment methodologies and choosing tolerable risk criteria. However these systems only work if individuals are motivated to comply and conform with the organisation's desires, which is where the need to understand the impact of organisational culture arose. A danger exists that an organisation's well considered and comprehensive safety policy, plans, and monitoring arrangements may not achieve the desired results, as Booth (1993) states :

> "procedures and systems are necessary elements of an effective safety programme, but that this is not the whole story. The critical point is not so much the adequacy of the safety plans as the perceptions and beliefs that people hold about them."

So there is a need to consider the factors that determine whether the safety procedures are implemented enthusiastically, grudgingly or not honoured at all.

To look at safety culture, the organisational climate and culture of an organisation needs to be considered and how safety practices and opinions concerning these fit into the prevailing culture of the organisation. Hall (1991) states that culture is the most important ingredient in the implementation of safety measures as without a good safety culture these measures will never be fully successful. Rasmussen, Pejtersen & Schmidt (1990) caution that cooperative work processes are performed by individuals with individual interests and motives, that is an organisation is a coalition of diverging and conflicting interests, not the perfectly collaborative systems assumed in the safety culture literature. Hence the extent to which people's individual attitudes are consistent with organisational goals is an important consideration.

The interest in safety culture emerged when it was realised that the formal safety management structures were not fully effective in achieving the organisation's safety intent (see previous chapter for the derivation of organisational culture). Hence it was hoped that a good safety culture would achieve good safety performance. Fundamental to the concept is the idea that individuals within an organisation will be motivated to behave safely and follow procedures without constant supervision. As will be reviewed in the following section, authors have described detailed frameworks for the development of positive safety cultures which cover some aspects of safety management systems.

A static view of safety is that there is "one right answer", which can be formulated in rules which will cover all eventualities, and a belief that health and safety standards are clear dividing lines between what is acceptable and what is not (Hale, Goossens & Gerlings, 1991). Commitment is cited as the motor that drives any safety system. This motivation is affected by the way in which different levels interact. A balance is required between a rulebound system, where safety is seen as boring, and its opposite where there is no harmonisation in problem-solving resulting in confusion. When system performance with respect to safety, reliability and risks is considered there tends to be a focus on technical reliability and individual's proclivity towards error at the expense of considering the systemic nature of safety and reliability.

Evidence from psychology show that 'prescribed tasks', based on formal norms and regulations and 'executed tasks', procedures followed in reality always differ (Leplat, 1989, Reyaud, 1988). Hence formal rules and regulations are collectively interpreted as unrealistic or unnecessary, but this viewpoint is not supported by the system. Further the complexity of the official regulatory system (of the state, the industry requirements, HSE, Railtrack) adds to the institutional complexity involved, reduces the transparency of events and increases the uncertainties and anxieties of the population. Further reporting systems are required to foster an open, proactive safety culture,

which needs to be implemented in ways that facilitate trust, frankness, openness and completeness of reporting on operating levels while at the same time guaranteeing learning throughout the organisation. Hence a safety culture is necessary to supplement the formal safety management systems of the organisation, which matches the viewpoint of High Reliability theorists and their 'culture of reliability'.

### 3.5.1 Origins of concept

The concept of safety culture was initially introduced in the Post-Chernobyl debate in a "Summary Report on the Post Accident Review Meeting on the Chernobyl accident" (IAEA, 1986) where the root cause of the disaster was attributed to the 'human element'. It suggested that to prevent similar accidents that complete authority and responsibility for safety must be placed on a senior member of the operational staff of the plant and that formal procedures need to be properly reviewed and approved, and that these must be supplemented by the creation and maintenance of a 'nuclear safety culture'. Following the Kings Cross Incident, Judge Fennel stated that, "A cultural change in the management is required" (DoT, 1988), whilst Lord Cullen in the Piper Alpha Inquiry believed that, "it is essential to create a corporate atmosphere or culture in which safety is understood to be and is accepted as the number one priority" (DoE, 1990). These interpretations of safety culture focus very much on the role of management, though as will be discussed later safety culture is not solely a management issue.

Reason (1987) in "The Chernobyl Errors" focuses attention on the human and organisational elements that might contribute to the unsafe operation of technological systems, and believes that there are lessons to be learned by Britain. Hence it is acknowledged that catastrophic incidents, such as Bhopal and Chernobyl, are not necessarily a Soviet or developing country issue but are of concern in the UK. The ACSNI committee in its first report on training (HSC, 1990) acknowledged the importance of safety culture and stated that training should include the development of an appropriate safety culture. So, the emphasis is on individuals who compose the safety culture understand the importance of safety and how it can be improved.

### 3.5.2 Safety Climate

Safety climate is the precursor to work on safety cultures. The term was initially used by Zohar (1980) to describe attitudes towards safety. Schneider (1975) defines climate as psychologically meaningful molar descriptions that people agree characterise a system's practices and procedures. Rousseau (1988) defines climate as "individual descriptions of the social setting or context of which the person is a part". Hence

climate is descriptive and it is a perception. Perceptions are sensations or realisations experienced by an individual, whilst a description is a report of these sensations. Beliefs are the result of an individual's attempt to make sense of a set of stimuli, a situation or patterns of interactions between people. Sproull (1981) organises beliefs into three main categories: descriptive (phenomenological), causal and normative. Descriptive beliefs are descriptive of the attributes and events associated with objects, so they specify what will occur from the believer's perspective e.g. 'Hard workers are well paid', 'Management can't be trusted'. Causal Beliefs express why particular events or states of nature, self or society occur e.g. X happened because of Y. So these beliefs specify operational relationships between a state of events and objects e.g. 'I make my boss happy by coming to work on time.' Whilst normative beliefs specify preferred states of being e.g. X should be Y. Normative beliefs reflect processes associated with social units. On the basis of this breakdown climate and culture are differentiated: climate is composed of descriptive beliefs, whilst causal and normative beliefs are major components in our conceptualisation of culture (Rousseau, 1988). By its practices and procedures a system may create many climates. People perceive climates because these molar perceptions act as frames of reference for the attainment of some congruity between behaviour & the systems practices and behaviour (Schneider, 1975; Dedobbeleer & Beland 1991). It was further described by Schneider (1990) as the shared perceptions of organisational policies, practices and procedures, both formal and informal.

The concept of climate was refined, as it was realised that investigations concerning the term climate were too general. This resulted in investigations considering many types of climate, e.g. motivation climate, organisational climate and communication climate; Zohar (1980) studied safety climates. A questionnaire was constructed in order to determine organisational safety climate, and was given to production workers in Israel. The results (i.e. the safety climate) reflected the employee's perception of the relative importance of safe conduct within their occupation and correlated with safety programme effectiveness. The eight factors identified were the importance of safety training, management attitudes towards safety, the effects of safety behaviour on promotion, the level of risk at workplace, effects of required workpace on safety, status of safety officer, effects of safety behaviour on social status and the status of the safety committee. Brown and Holmes (1986) validated Zohar's eight safety climate dimensions, and reduced it to a 3 factor model which retained the following factors :

1. Employee perception of how concerned management is with their well-being.

2. Employee perception of how active management is in responding to this concern.

3. Employee physical risk perception.

Dedobbeleer and Beland (1991) performed a validation study of the Brown and Holmes' (1986) climate model. It was applied to construction workers and a two-factor safety climate model was found to provide a better fit to the data. The first factor in this two factor model measured management's commitment to safety in terms of management's safety attitudes and practices. The second factor was labelled worker's involvement in safety, which related risk and control as factors affecting an individual's perception of risk.

Cooper and his team from UMIST (from Cooper, 1993) adapted Zohar's original safety climate questionnaire and applied it to a company in the chemical industry. It was a fifty item questionnaire which used a five point Likert scale, and included three open ended questions which investigated the most important factors influencing safety, other important factors and changes to improve safety. They identified a two factor model of direct and indirect influences upon safety perceptions. Direct included management, risks and the workplace, whilst indirect factors included the influence of the safety committee and the safety officer. These factors were proximal and distal, hence supervisors were found to have a greater impact on the safety, than the management. Different departments were also analysed, and this showed that there was a greater difference the further the section was from production, so individuals held different attitudes depending on their position within the organisation. This final point is important as it demonstrates the futility of random sampling within an organisation due to the lack of response consistency; and illustrates the importance of considering all members of an organisation.

Ashford (1985) distinguishes between shared assumptions (culture) and shared perceptions (climate) and argues that culture 'informs' climate by helping individuals to define what is important and make sense of their experiences. Hence climate operates at the level of the individual perceptions and is a manifestation of safety culture but that it does not provide evidence of what is underlying culture or any form of understanding. So the concept of safety climate is a statistical construction of a profile of perceptions held in an organisation regarding safety and is a vehicle for summary description (Rousseau, 1988). Safety culture has emerged with a meaning that is very similar to safety climate, though the term culture conveys more accurately the origins of the condition. Ashford (1985) continues that organisations with strong cultures will have member consensus in descriptions of it.

### 3.5.3 Safety Attitudes

Safety climate reflects the perceptions that employees share in relation to safety. Prior to a discussion of safety culture a review of research into attitudes towards safety will be considered, and their impact on the behaviour. This is important as many of the approaches towards safety culture consider attitudes towards safety, and neglect the important behavioural components of a culture. Hence safety climate concerns beliefs about safety, where a belief is simply information about an object. Whilst attitudes are defined as a learned disposition to respond in a consistently favourable or unfavourable manner to a given object or ideas. Attitudes also involve an affective evaluation in terms of, for example, like or dislike which predisposes the individual to respond in a particular way.

Lee (1981) describes attitudes as a summary of a person's perceptual and cognitive interpretation of conditions. Within this cognitive model, particular emphasis is placed upon the ways in which an individual comes to know and adapt to his environment through the storing, structuring and processing of information about that relationship. The worker is influenced by a number of agencies which shape the way in which they 'see' and experience their work, and any appropriately safe way of performing it. The agencies include co-workers, supervisors, management, safety officers, safety representatives and organisational policy as seen in day-to-day decision-making, provide the fabric of the general organisational culture of which the more specific safety culture is a part (Leather, 1988, 1987). Leather (1987) concludes that safety should be considered in the context of both organisation and a person's non-work life, as these influence attitudes and behaviours at work.

Leather (1988) performed an attitude survey between public and private sector firms looking at the influence of particular organisational factors upon individual attitudes and motivation. It was discovered that at individual levels, that these norms and values are communicated through the attitudes and behaviours of management (Leather, 1988; Shafai-Sahrai, 1973). Only when the attitudes and behaviours of management are seen to reinforce and support safety behaviour as a primary organisational goal does any real improvement in safety performance. So an understanding of the relationship between safety and other organisational factors including time, costs and profitability is essential (Leather, 1988; HSC, 1993).

Syriot (1986) performed a study on Belgian warehouse workers looking at employee attitudes to safety. It was discovered that employees who attended a video-taped film about safety had a significantly more favourable attitude towards safety. However this highlights the question concerning changes of attitude affecting behaviour, and if

behaviour changes, can these be attributed to attitude change. Zohar, Cohen & Azar (1980) investigated the usage of ear protectors within a metal fabrication plant, and identified a number of negative factors associated with their usage. Subsequently they performed ear tests on a group of the workers, and this information was fed back to the workers as a means of motivating greater use of ear protectors. Eighty five percent of the test group used the ear protectors compared to the control group of ten percent. All groups were subjected to poster campaigns and group lectures. The effectiveness of this feedback approach is explained as a two-stage process. It involves individual reinforcement, and a subsequent adoption of new group norms for accepted behaviours.

In an organisation-wide survey, Cox & Cox (1991) looked at the structure of attitudes towards safety with respect to software, people and risk. Their questionnaire had four sections investigating attitudes held about good safety practices; attitudes to the company's safety philosophy and culture; perceptions of the company's commitment to safety and suggestions for improving attitudes to safety. A factor analysis of the results led to five orthogonal factors: personal scepticism, individual responsibility, the safety of the work environment, the effectiveness of arrangements for safety, and personal immunity. So strategies for enhancing safety culture through attitude change should reinforce constructive beliefs (e.g. individual responsibility) and positive evaluations (e.g. safety of work environment, and effectiveness of arrangements for safety) and destroy negative beliefs (e.g. personal immunity, and scepticism). Urlings, Nijour & Dul (1990) believe that through a systematic analysis of attitudes and behaviour, specific information can be selected which may change their attitudes.

ACSNI's approach (HSC, 1993) towards the influence of attitudes in the concept of safety culture, include identifying attitudes and coping strategies that affect the safety culture positively, and optimisation of these through selection and training; the provision of information on the appropriate safety behaviour, and on the safety rules and procedures of the organisation; and by ensuring that all members of the organisation accept a personal responsibility for their own and others' safety. Again the question emerges concerning the effect of individual attitudes, and group held beliefs upon the different behaviours of individuals within the organisation.

Canter (1989) administered questionnaires and programmes to raise people's awareness of safety at a workplace and found, following administration of the questionnaire, a decrease in lost time accidents. Canter has proposed that this may be a positive effect of the Hawthorne Effect i.e. that people are aware they are being studied, know what the study is about and modify their behaviour accordingly. Within this context the Hawthorne Effect is a beneficial result, despite methodological

problems or the problems of predicting the effects of an intervention. The Hawthorne effect is a possible explanation for the results attained in the studies described earlier (e.g. Syriot, 1986; Leather 1987, 1988), and highlights the distinction between behaviour and attitudes, where attitudes may not have changed but behaviour has.

### 3.5.4 Safety Culture

Turner, Pidgeon, Blockley and Toft (1989) define safety culture as,

> "that set of beliefs, norms, attitudes, roles, and social and technical practices that are concerned with minimising the exposure of employees, managers, customers, and members of the public to conditions considered dangerous or injurious."

So safety culture is a property of the whole, rather than of the individuals composing the group (Turner, 1991). From definitions of organisational culture, safety culture is the constructed system of meanings through which a given people or group understand the hazards of the world (Pidgeon, 1991). The culture is created and recreated as members of the culture repeatedly behave in ways that to them seem natural, obvious and unquestionable ways of acting and as such will serve to construct a particular version of risk, danger and safety (Pidgeon, 1991). Apostolakis et al (1992) consider safety culture encompass issues of multi-dimensional domains, which are structural as well as attitudinal, and relate to both organisations and individuals. It has also been proposed that safety culture is a product of the larger concept of organisational culture (Joksimovich, 1992).

The benefits of safety culture includes the development of an environment of safety consciousness. This is created by the practice of organisational and managerial policies, in which deviation from normal to abnormal conditions is greatly reduced, and that abnormal conditions will be well controlled (Wu, Apostolakis & Okrent, 1989). The importance of such a unique culture lies in the fact that people within the organisation are then conditioned to use similar decision strategies and assumptions, which preserves co-ordination and centralisation. So safety culture can be considered as that part of the overall work ethics related to the safety of the organisation, and as such acts as a control mechanisms regulating behaviour to ensure consistency with either with the organisational purpose or the leader's purpose (they could be different).

An 'ideal' culture would be for each individual to come to the conclusion that their own safety is their own responsibility, and that the safety of their co-workers, company, general public and the environment, is their collective responsibility (Minter, 1991; HSE, 1991). A safety culture is about dedication to safety, and the attitude everyone has towards safety and how it is executed (Hall, 1991). Hence within a safety culture

everyone considers safety an important issue and their behaviours are governed according to their individual guides for behaviour, which should parallel the organisational culture.

### *3.5.4.1 Approaches towards Safety Culture*

Several approaches to safety culture have been formulated, a couple are described below. Safety culture can be categorised according to its orientation, whether nuclear or non-nuclear. Specific nuclear power industry approaches, include the most recent which is the approach suggested by the Advisory Committee on the Safety of Nuclear Installations (HSC, 1993), and the International Atomic Energy Authority's (IAEA, 1991) approach to safety culture. These are summarised below.

#### 3.5.4.1.1 Advisory Committee on the Safety of Nuclear Installations (ACSNI) Report on Organising for Safety.

The ACSNI committee in a summary and review of Safety Culture, define the concept as,

> "the product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine commitment to, and the style and proficiency of, an organisation's health and safety management. Organisations with a positive safety culture are characterised by communications founded on mutual trust, by shared perceptions of the importance of safety and by confidence in the efficacy of preventive measures."
>
> (HSC, 1993)

The committee emphasise that one cannot assess or improve safety without consideration of shared common values, attitudes, competencies, and behaviours. The HSC (ibid.) state that a step-by-step improvement to safety culture is essential, and that the main steps are:

1. a review of the existing safety culture;
2. assess relative importance of safety issues, and choose those with the highest priority;
3. take actions to change those aspects with the highest priority;
4. for the process to become iterative.

So a continuous process is advocated which deals with the safety culture in manageable chunks, and due to the nature of the process all members of the

organisation should develop a sense of ownership of the organisation's drive to improve safety.

The study group developed a safety culture prompt list. The ACSNI committee believe that proprietary audit tools do not reveal the underlying deficiencies in a safety culture. Hence the prompt list seeks to establish the adequacy of an organisation's attempts at motivating the entire organisation to full commitment to safety. To implement the prompt-list it is important that internal reviewers are used, due to their knowledge of the system. From the review of an organisation's safety culture an action plan can be developed to improve the existing safety culture.

ACSNI believe that an organisation should be developed:

> "where all employees agree through a system of communications based on mutual trust that the organisation's safety procedures are necessary and workable, based on shared perceptions of hazards and risks' will reduce accidents, will involve consultation with employees and will be subject to continuous review."

The approach suggested by the ACSNI committee to develop a safety culture is rigorous, builds on the previous approaches to safety culture and encourages an awareness of the prevailing culture within an organisation. Hence the ACSNI committee focus on the concept of a shared culture, and the importance of mutual trust and effective communications in an organisation for the development of appropriate attitudes and perceptions towards hazards.

#### 3.5.4.1.2 International Nuclear Safety Advisory Group (INSAG) Approach to Safety Culture

The International Nuclear Safety Advisory Group (INSAG) produced a document "Safety Culture" (75-INSAG-4), which defines safety culture as:

> "that assembly of characteristics and attitudes in organisations and individuals which establishes as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance"
>
> (IAEA, 1991)

The report refers to safety culture within nuclear power plants. Their definition covers attitudinal and structural components, and unites the individual and the organisation to meet all safety issues with appropriate perceptions and action. They propose that safety culture is intangible, but it's outputs are tangible manifestations. Therefore the tangible manifestations of a safety culture should be exploited to discover what is underlying. INSAG (IAEA, 1991) consider a safety culture to be essential to achieve an organisation's safety potential; so all safety related duties should be carried out

correctly, with alertness, due thought and full knowledge. But these types of attributes e.g. personal dedication, safety thinking and an inherently questioning attitude are intangible and difficult to measure.

The manifestation of safety culture as proposed by the IAEA (1991) has two components: the organisational framework which is determined by policy and managerial action; and the response of individuals working within the framework. These are summarised below:

### *Organisational Framework*

The organisational framework is composed of policy level requirements and management structure.

#### *Policy Level Requirements*

Within nuclear plant safety a safety policy tends to be set to meet legislative requirements. Legislation is set by governmental bodies to regulate the safety of nuclear power plants (and other potentially hazardous installations) to protect individuals, the general public and the environment from harm. Hence statements of policy are made to advertise an organisation's objectives to staff and the public, making a declaration of the corporate commitment to safety. A policy defining the working environment requires corporate level commitment which is publicly asserted and well-known, demonstrating an organisation's willingness to be open in safety matters.

#### *Management Structure*

The management structure should be clear to ensure that the safety policy is effectively implemented, and that accountability for various safety responsibilities is clear. Adequate resources must be provided so that safety related duties may be carried out. This involves the provision of trained staff, consultants and contractors as necessary and that a technical infrastructure exists for the safe operation of the plant.

### *Requirements from Managers*

According to the IAEA (1991) the key to an effective safety culture is found in the practices moulding the environment and fostering attitudes conducive to safety. It is therefore management's responsibility to engender these attitudes through the incorporation of the organisation's safety policy and objectives. This is achieved through a definition of responsibilities, control of working practices, provision of qualified and trained staff, providing a framework of rewards and sanctions, and reviewing and auditing the procedures. These are briefly summarised below:

*Definition of responsibilities*: where individual responsibilities are discharged through unique and clear lines of authority. Hence managers ensure that individuals understand

not only their own responsibilities but also those of their colleagues and management, and how these relate to other groups.

*Definition and control of Working Practices*: which requires that all documents ranging from policy directives to detailed working procedures are subjected to formal scrutiny, checking and testing under the organisation's quality assurance provisions.

*Qualifications and Training:* requires all staff to be adequately trained and that assessment of technical competence must be provided. This 'skills' training must be provided in a broader framework which ensures that individuals understand the significance of their duties and the consequences of mistakes arising from misconceptions, or lack of diligence.

*Rewards and Sanctions:* Rewards should not be awarded solely on production levels, instead consideration should be given to safety performance. Individuals should be encouraged to identify, report and correct imperfections in their own work to avert future problems, however management action should be taken for repeated deficiencies or gross negligence.

*Audit, Review and Comparison*: Management should implement monitoring methods which look at training programmes, staff appointment procedures, working practices and document control. This enables the safety management system to be checked internally, however experts from other parts of the organisation or from outside the organisation may provide opportunities for emulation and adoption of good practices from elsewhere.

*Commitment:* Managers must ensure that their staff respond to and benefit from this established framework of practices and by attitude and example, to ensure that their staff are continuously motivated towards high levels of personal performance in their duties.

With the exception of the final recommendation the components of managerial responsibility are identical to a well planned safety management system. The final recommendation 'commitment' refers to a less tangible and subjective aspect of a manager's role which involves monitoring reactions and opinions and attempting to modify these where appropriate.

The following category specifies the response of individuals and the individual requirements to achieve a safe culture.

### *Response of Individuals*

Individuals within the organisation have to act in accordance with the organisational framework. So "excellence in matters affecting nuclear safety is characterised by :

A QUESTIONING ATTITUDE
plus
A RIGOROUS AND PRUDENT APPROACH
plus
COMMUNICATION
The result will be a major contribution to
SAFETY."

Therefore an individual should raise questions relating to their individual participation in safety, hence "Do I understand the task?", "What are my responsibilities and how do they relate to safety?", "Do I need assistance to perform this task?". Depending on the familiarity and complexity of a task these decisions can be deliberate or automatic.

The rigorous and prudent approach involves individuals understanding and complying with their work procedures, being alert to the unexpected, seeking help when necessary, devoting attention to orderliness, timeliness and housekeeping and foregoing shortcuts. Communications are essential to transmit and receive information concerning safety, for example reporting and documenting results of both routine and unusual work. These specified requirements should produce safety attitudes in individuals which will contribute to a high level of safety, and generate a personal pride in dealing with important tasks in a professional manner.

### *The Role of Support Structures*

Safety culture has been described above as a collection of commendable attributes within an organisation, with all individuals within an organisation contributing to plant safety. The IAEA (1991) recognise the crucial importance of governmental and supporting groups in the creation of an organisation's safety culture. The governmental input could be consideration of budgets and their impact on nuclear safety when devising budgets.

The IAEA define safety culture as an ideal safety culture. The effects of trade-offs between various constituents of a system are not considered, and neither is a cost/benefit analysis performed, whereby different recommendations are considered with regard to their cost and the potential benefits they could achieve. Hence a less dictatorial and balanced approach is required to identify and assess the strengths and

weaknesses of a safety culture and to consider change on the basis of a cost/benefit or consequence analysis.

#### 3.4.2.1.3 Other Safety Culture Approaches

The previous sections described safety culture approaches specific to the nuclear industry, which due to the origins of safety culture research, provide the fullest and most detailed descriptions of the concept. However a number of non nuclear publications have also suggested approaches for the development of a safety culture. These are the CBI approach (1990), the philosophy of 'Care' and DuPont's organisational safety culture. These are briefly described.

The Confederation of British Industries Approach to developing Safety Culture (1990) describes the results from a survey of companies using a questionnaire to look at their approach to health and safety management, and explore what the development of a safety culture means in practice within these. Essential components identified were safety policies, management action, employee participation, involvement, communication and information provision, training, reward systems and monitoring. The approach considers best practice in these areas, and therefore describes what works for these companies, and is a description of those safety management systems which attain good safety performance.

The 'Care' philosophy is an approach towards safety culture advocated by Turner (1991) and Dawson (1991). It is a philosophy rather than a description of how to attain a safe culture. It focuses on the attitude of 'care' required by management and the workforce to achieve a safe culture. The approach considers the need to establish a culture of care, through encouraging good safety practice and avoidance of a culture of blame. Turner (1992) believes that 'care' exists in terms of concern for the outcome of dealing with risks and solicitude for the effects of their activities on people, and that these attitudes should be displayed by all employees within an organisation.

The multinational organisation DuPont has a good safety record, especially when the diversity of operations are considered. They propose that their 'Principles of Safety Success' are responsible for their corporate safety culture or way of life (Griffiths, 1985). Within DuPont, safety culture involves safety being everyone's responsibility, from the chairman down to the most junior employee (Windsor, 1991). The ten principles of safety success need to be accepted, and an effective safety programme incorporated. So DuPont involve the workforce through training, information provision, regularly reviewing operating and maintenance procedures, and involving the workforce in safety committees and inspection teams (Griffiths, 1985). The problem with seeking

to copy this type of approach is that attempting to emulate other organisation's safety culture will not necessarily be successful, and that organisation's need to evolve their own safety culture which would be compatible with the organisational culture (as initially recognised in organisational culture research).

## Research Findings

An internationally organised conference on safety culture was held in Vienna during April 1995. The focus was on nuclear safety in power plants and in the reprocessing industry. The conference was composed of a mixture of authors from both academic and industrial backgrounds. The industrial papers tended towards prescription, whilst the academic tended towards models of safety culture and important components. A number described how safety culture can be quantified, which is contradictory to the understanding of the concept of organisational cultures.

### *3.5.4.2 Characteristics of a Safe Culture*

Safety culture techniques, approaches and recommendations were reviewed. This resulted in a number of issues being considered as essential for the development or attainment of an effective safety culture. These are briefly described below, in terms of desirable attributes and characteristics. The list of characteristics is not complete, but aims to discuss a number of common themes emerging in the academic and applied literature. The features described relate to incident investigation; the trade-off between production and safety; management actions and commitment; procedurised systems; communication and information provision; and institutional design. These are not components of a safety culture model, rather are facets of a safety culture.

#### 3.5.4.2.1 Incident Investigation

Dawson (1991) emphasised that there is little point in blaming an individual for the causation of incidents, as organisational or technical factors and their designers and managers are more to blame. The only justification for blaming careless workers is that it prevents the allocation of blame falling elsewhere (Turner et al., 1989). As Rasmussen (1990) stated it is important to avoid the unfair blame of operators who act according to orders as this can cause alienation. This is further emphasised by Krause and Hidley (1989) who believe that blaming the employee is management error, as employee behaviour is a function of the management systems operating within the organisational culture. So incident investigations should not actively seek to allocate blame, instead they should identify the root causes of an incident and act accordingly.

Pidgeon (1993) states that the issue of blame is a "particularly difficult dilemma". On the one hand it is necessary to sanction individuals and organisations who act unsafely, but this needs to be balanced against the fact that incidents and near misses must be investigated to learn from and take preventive actions to prevent reoccurrences. If individuals and organisations are aware that the blame for accidents, and potentially legal action will be made against individuals, could motivate individuals to examine their actions and behave more safely. The finding of a 'culprit' though, may suppress the full and candid reporting of incidents and unsafe events, and be detrimental to the learning process. Lindstedt-Siva (1991) in their report on the Exxon-Valdez disaster commented that:

> "restricting information flow is the worst thing that can happen during an emergency. This occurred during the Exxon-Valdez spill response and continued afterward, when response planners should have been sharing and applying the information to strengthen preparedness for the next spill."

This shutdown of communication pathways was attributed to fear of accepting responsibilities for the cause of the accident and the legal implications of this. It is concluded by Browning and Shetler (1992) that there is a need for openness in incident investigations, rather than fault-finding, blame attribution and the close-down of knowledge which typically results. This is particularly the case in multi-company environments where blame typically involves attribution of financial culpability and responsibility.

Pidgeon (1993) states that ongoing reflection and learning is a key requirement of a good organisational safety culture, and that a 'no-fault' approach to mistakes and errors could be the most satisfactory response. The CBI (1990) state that accident and incident investigations offer vital information for improving the safety of an organisation, but that this must operate in a blame-free environment.

However, the idea of a blame-free reporting scheme neglects the sociological role that blame has in organisational learning. As already mentioned blame allocation (when justly allocated) can facilitate a greater degree of care in organisational situations. Douglas (1986) believes that institutions tend to solve some of their organisational problems through the public allocation of blame. So, when a dead pilot can be blamed for the error that crashed his plane, there is no need to inquire further into the adequacy of air traffic control or assess the plane's fitness for flying. Blaming the victim is a strategy that works in one type of context, and blaming the outside enemy a strategy that works in another. Victim blaming facilitates internal control, outsider blaming enhances loyalty; thus both strategies prevent the community being divided by dissent through development of a culture. Hence the process of blame pinning or

exonerating from blame strengthens the pattern of the organisation and are actually an integral part of it (Douglas, 1986).

So blame is a ubiquitous feature of many, if not all organisations and underpins many discussions on risk and danger as Douglas argues (1986, 1992). Douglas (1992) states that the only way for a blame free environment to operate, is with an insurance scheme to compensate victims to ensure there is no retribution. So the idea of a blame free environment is complex, as the concept of blame is necessary in an organisation for organisational learning and reinforcing the culture, whilst 'blame-free' is required to encourage incident reporting.

#### 3.5.4.2.2 Production and Safety

Within organisations conflicting priorities could be considered as safety, production, share price, financial outputs etc. Depending on the focus of the organisation, one of these will take priority and effect all decisions made in an organisation. Some approaches believe safety should have organisational priority for a effective safety culture, however this is contentious and would probably not achieve complete organisational commitment.

In the CBI report "Approach to Developing a Safety Culture" (1990) they found that the safety policies of the organisations surveyed frequently included statements such as, "safety will be given top priority and will take precedence over output, commercial and financial considerations." Ross (1991) believes it is essential that safety has at least equal priority to financial performance. Whilst Evans (1992) stated that it is not economically possible to have safety as the primary goal. This was elaborated by LaShier (1991) who points out that 'safety first' creates a conflict with other organisational goals such as sales, production and Quality Assurance. Upon analysis safety can not be first in an organisation's priorities but must be an integral part of the management's priorities and culture. DuPont believe that safety should be managed in the same way as finance, sales, production and advertising where problems are analysed, objectives set and performance measures against targets (Griffiths, 1985).

So safety and the development of a safe culture should be firmly incorporated into the organisational culture, so that the pursuit of increased technical performance takes place in the context of a culture and management system capable of ensuring that safety issues are rigorously pursued throughout the life of a project, from concept design onwards. As Pardy (1991) states safety should be incorporated into the existing fabric and corporate culture of the organisation. Through an awareness of the delicate balance between production and safety, effective decisions can be made. The

priorities and balance between different organisational goals should be reflected in the culture and carefully communicated throughout the organisation.

#### 3.5.4.2.3 Management Action and Commitment

The CBI (1990) emphasised the need for policy statements to be effectively communicated to all employees, and management must be seen to be fully committed to the spirit behind the policy statement. It is stated that for effective policy implementation that managers at all levels must incorporate health and safety responsibilities into their everyday responsibilities. This is consistent with one of Deming's fundamentals of quality (as cited by Chapman, Hertz & Feldman, 1992) that senior management must demonstrate commitment. So sufficient resources must be provided; decisions should not be made to optimise short term behaviour, but consider long term benefits, and management behaviour should be consistent with their espoused values (from Argyris & Schon, 1978).

A safety policy requires corporate level commitment which is publicly asserted and well known, demonstrating an organisation's willingness to be open in safety matters. Hence for a positive safety culture there should be commitment to safety by all individuals. It is particularly important for management to show commitment to safety as their example can affect the behaviour of others.

#### 3.5.4.2.4 Procedurised Systems

For a safety culture to be achieved and sustained it is necessary to have the active involvement of all employees. The CBI (1990) state

> "Taking safety from the written documents and putting it into practice depends on the people involved carrying out the procedures the way they are supposed to .... With employee involvement a culture of shared values and behaviour patterns develops. Safe working attitudes and standards become ingrained."

However procedures are not always followed. DeJong & Koster (1974) found that even in very highly rationalised and programmed chemical refineries, that experienced operators have their own procedures that deviate from the standard procedures, and the operators disguise this. Whilst another study found that when operators came on shift that they experimented with the plant, and had their own preferences as to how the plant should be run (West & Clark, 1974). Perrow (1983) believes that this type of operation leads to skill development, system comprehension and relief from tedium; but the systems are not designed to achieve these outcomes. This idea is reflected in findings from researchers in High Reliability Organisations.

Should procedurised and auditable systems be developed which are adequate under normal conditions, but could fail in crisis situations, or should looser less controlled system be operated which achieves the skills described above by Perrow (1983). The arguments concerning these are similar to those by Bainbridge (1987) concerning automated systems. Within HROs the organisational culture allows staff to violate procedures under certain circumstances as long as certain codes of behaviour are followed.

#### 3.5.4.2.5 Communication and Information Provision

As the ACSNI committee stated, an organisation should be developed

> "where all employees agree through a system of communications based on mutual trust that the organisation's safety procedures are necessary and workable, based on shared perceptions of hazards and risks will decrease accidents, will involve consultation with employees and will be subject to continuous review."
>
> (HSC, 1993).

Consistent with the concept of safety being integrated into the organisational culture is the idea that consultation and information provision should not be treated in isolation, but should be handled in normal management meetings in conjunction with other topics such as quality and production. As Booth (1993) points out communication does not influence safety directly; it is related to the organisational culture.

Research by Ryan (1991) looked at the expert judgement of researchers to identify the key predictive indicators of safety performance in the US Nuclear Industry. The lead indicator was effective communication resulting in commonly understood goals, and the means to achieve those goals at all levels of the organisation. For communication to be effective it needs to operate two ways at all levels (Booth, 1993), and there should be multiple communication routes (Browning & Shetler, 1992).

So communication is a vital ingredient of safety culture (Booth, 1993; IAEA, 1991), hence "effective communication between all those concerned through the use of visible behaviour, written material and face-to-face discussion to transmit safety goals" (HSE, 1991) is necessary for an effective safety culture.

#### 3.5.4.2.6 Institutional Design

Hood et al (cited by Pidgeon, 1993) raised the fundamental question as to whether current accumulated knowledge of organisational functioning is itself sufficient to design operational principles and guidelines that will improve an organisation's handling of safety issues. Thus the question is whether current knowledge will allow for

social science consultancies to design safe cultures. Evidence, however suggests that this is not possible. For example, Johnson (1991) suggests that there is no reason to believe that safety cultures will be easy to change. In an examination of organisational cultures, Nord (1985) found that organisational cultures are resistant to direct change. Schein (1985) reiterates this by saying that the evidence suggests that organisational cultures are highly resistant to change and that leaders who attempt to change the culture can actually reinforce an existing culture.

Toft (1992) states most safety culture techniques assume that safety culture can be changed by decree (e.g. policy) or by prescription (e.g. mission statement, objectives, plan implementation, training) as though changing a culture through direct manipulation was possible. Instead, Toft proposes a method of organisational learning where permanent change is achieved. This is consistent with research on high reliability organisations, and the idea that these organisations evolve many of their crisis management structures from within, through a process of institutional self-design. Hence institutional design does not appear to be an effective method for the attainment of a safe culture, instead a process of organisational learning should be pursued.

To overcome the problems of external expert design ("them vs. us" by lacking insight into the needs of the operations and maintenance personnel and work situations not supporting learning and developing a sense of responsibility) and the problems of a top down imposition of rules and procedures, Visser (1991) advocates the creation of a feeling of ownership so

> "operators and maintainers must play a greater part in creating the procedures and in keeping them current, as well as the design and development of the facilities entrusted to them."

So safety must be integrated into the company philosophy or culture are management concepts and practices, reward and pay systems, organisational and work design, physical layout, procedures, training and quality assurance. Commitment from management providing resources is needed, setting specified safety targets, not tolerating unsafe acts/states once they are identified, insisting on being kept informed of safety matters, voluntarily undergoing safety audits, and establishing a sound accident reporting and investigation procedure.

### *3.5.4.3 Potential and Limitations of Safety Culture*

A large number of tasks are considered to be carried out on skill or rule-based operation (Rasmussen, 1990), but many rules are designed as preventative measures for events that 'never happen' - so under normal operating conditions there is no need

for compliance; or the systems fail to work because of psychological ambivalence by management (Janis, 1980), or they are incompatible with existing habits (Triandis, 1980). The development of safe habits and routines can be reinforced through feedback, and rewards or sanctions (Battmann & Klumb, 1993) however this can limit people's freedom and result in blame avoidance, the goals "then are changed from concern for the system to mere avoidance of liability" (Wilpert, 1991). In complex and dynamic systems not everything can be anticipated and provided for - no matter how bulky the rulebooks have become. Hence operator's have to bridge the gap between the dynamic system and static regulations, knowledge-based behaviour which requires adequate information and understanding of complex systems so that operators can identify a system that does not "fit" to existing rules and procedures and judge consequences.

So within this framework the notion of safety culture has a lot of relevance for if the safety culture is effective then these various difficulties regarding the design, implementation and operation of safety management systems can be overcome as people work within their own rationale and framework and organisational stability can be maintained. The organisation can support this philosophy by global principles such as "safety first". These maxims are too general to be operational but they are a symbol of the priority of safety matters for the management and they may transport the spirit of the regulations, but unlike the rulebook they give room for "interpretation, improvisation and unique action"(Weick, 1987).

Corporate culture programmes (e.g. Deal & Kennedy, 1982) are considered a means to produce commitment and identification with the organisation, including corresponding behaviours. The philosophy behind it is that management want to establish a set of shared attitudes, beliefs, norms and values to coordinate action; the objective is to replace bureaucratic control by social control. So safety culture is the "replacement of mechanical application of rules by system oriented, critical thoughts and by responsible acts". However there are a number of problems with the concept of culture:

- Not an easy thing to develop
- Change may not be controllable (e.g. Dyer & Dyer 1986)
- Organisational safety cultures may not be unitary or homogenous (e.g. Martin & Siehl, 1983)
- Relation between beliefs, attitudes and norms on behaviour not understood (e.g. Ajzen & Fishbein, 1977; Triandis, 1980)

These problems were stated as

> "culture is not a simple thing that can be bolted on to an organisation, nor a simple set of practices that can be implemented on a Monday morning after a course."
>
> (Turner et al, 1989)

### 3.5.5 Conclusions on the Safety Culture Concept

Within this chapter the 'human element' of an organisation has been considered especially with respect to its impact on safety. The origins of safety culture, rooted in investigations following the incident at Chernobyl, were mentioned, and a discussion of organisational culture and how this relates to the concept of safety culture was made. The notions of safety climate, safety attitudes and safety culture are described relating these to organisational safety. Safety climate was the initial concept, which through attitude surveys and statistical modelling sought patterns and models of factors influencing safety behaviour; attitude surveys attempt to identify safety critical attitudes and relate these to safety behaviour. Whilst definitions of safety culture suggest an all encompassing concept which can be described as a codex which regulates one's behaviour, and encourages individuals to work safely.

I would like to close this chapter on safety culture with two notions. As Wahlstrom (1995) stated

> "reality is richer - safety culture can not be decoupled from its cultural anchoring in values, attitudes and practices... a simplistic application of the concept may even do more harm than good."

And that when operating within a framework of organisational change it is important to consider the words of Rochlin and Von Meyer (1994):

> "To tinker with staff and department organisation, assignments of responsibility, delegation of authority, operator discretion, or even control room design and integration without understanding the role of culture is to perform a real time experiment with possibly irreversible consequences."

Hence the notion of safety culture is seen as both relevant and important, and should be coupled with the notion of learning organisations. It is postulated that for organisations to be truly safe and have a effective safety culture it is important for structures to be in place to enhance organisational learning.

# CHAPTER FOUR

## *A description of a Train Operating Company and its management*

> A railway is short, but life is long and generally the longer the railway, the shorter your life.
>
> Punch, 1840.

Over the past decade the former British Rail has undertaken an extensive and radical review of its management structures, operational practices and procedures for the provision of transport to the general public as it moves from the public sector towards privatisation. A series of acts were passed in the 1980s and 1990s aimed at introducing competition and consumer choice into the transportation industry. These legislative changes, in conjunction with a high profile Public Inquiry into the disaster at Clapham Junction in 1988, has resulted in substantial changes in the management of safety. This chapter reviews these changes and discusses the implications for the management of safety within the Train Operating Company.

## 4.1 MANAGEMENT OF BRITISH RAIL

Historically British Rail was managed through the maintenance of a rough and ready order based on agreement between many different interest groups, held together by good faith that emanated from a unitary dedication and commitment to the railways which allowed British Rail to make reasonable progress towards its goals (Bate, 1994). Michael Bonavia (1981, 1985) in his descriptions of the history of British Rail states that in recent years it has suffered from "Reorganisation Fever". This is where copious amounts of time and money are spent reorganising, or planning to reorganise structures, with external consultants being the main beneficiaries. British Rail's aim being to achieve clarity in the definition of roles, responsibilities and reporting relationships, making people personally accountable for their actions, and purging the system of all ambiguity and uncertainty. Reorganisation into sectors was summarised by Bate (1990) as:

> "During the 1980s culture and counter culture fought it out as the old guard in 'production' clashed head on with the young Turks in the 'Sectors', each parading before the other ideologies and styles of thought which they knew to be provocative and unacceptable. The one side

> valued service ('value for money'/the social railway), the other side profit ('money for value'/the commercial railway). These were life issues, issues on which no ground could be conceded. As one participant put it 'there is a clash between those who seek professional management and those who see railways as a quasi-religion - something to which normal commercial disciplines shouldn't or couldn't apply."

These views expressed by Bate (1990) do not appear to have changed despite further reorganisations in recent years. However the 'old style' of senior BR managers are no longer a dominant force within the company and an influx of new managers means that the workforce still do not follow the lead of management. British Rail, prior to 'Organisation for Quality' was a highly centralised formal bureaucracy which was reflected in a complex and extensive hierarchy, with considerable attention to rules and regulations and a rather rigid and autocratic style of management. The move was away from a large paternalistic organisation and management from the top. Rayner (1993) believes that "the general move to a more relaxed management style is inappropriate to safe railway operation ... such false bonhomie does not sit well at the risk related interface of the running railway - Airlines, Police and Armed Services keep their formal structure where it matters", he further states "unless a formal system remains with professional knowledge and professional standards, using my Military analogy, more people will be killed by friendly fire". This is a contentious issue, but it is a feeling supported by much of the workforce within the former British Rail.

## 4.2 THE RAILWAYS ACT

The first step in the government's move towards preparing BR for privatisation was Organisation for Quality where the railway was divided into distinct divisions. In 1992 the government published a White Paper, "New opportunities for the Railways - the privatisation of British Rail", which would allow new service providers to have access to the railway network, and transfer British Rail's operations to the private sector. The Railways Act 1993, establishes the legislative and administrative machinery to achieve this goal. The Act establishes a Rail Regulator, whose functions include the issue of licences to railway operators and approval of agreements made between Railtrack (the infrastructure controller) and operators, and a Director of Passenger Rail Franchising, whose function was to transfer the passenger service now operated by BR to the private sector as franchises.

The different operations that make up the railway industry, carried out by British Rail, are now separate businesses moving into the private sector. Passenger services are run by twenty-five Train Operating Units (or Companies following their incorporation), whilst Railtrack is a separate organisation which owns and manages the infrastructure

of the Railways. The infrastructure includes the track, stations, depots, buildings and operational property. These will be leased to the different companies, including Train Operating Companies and station operators. Railtrack is a commercial enterprise whose principal revenue will come from selling access to the infrastructure (e.g. Track Access Charges). Hence Railtrack are responsible for time-tabling, infrastructure maintenance and signalling and will coordinate the national passenger timetable. Their workforce is comprised mainly of signalling staff, and operational and electrical control staff. Railtrack's primary area of control is dealing with route assessing and regulation. Whilst each Train Operating Unit deals with the rolling stock and train crew resources, information on train services will be passed from Railtrack Control to the TOU Control, who will be responsible for the transmission of this information to staff, customers and media. Train Operating Units also have interfaces with the companies who lease trains (ROSCOs), and other service suppliers. At the time of writing this thesis Railtrack had been floated on the Stock Market, and approximately half of the other companies had been granted franchises to operate in the private sector.

The military culture persists amongst personnel on the railway despite several large-scale and wide-ranging reorganisations (e.g. "Organisation for Quality," and the run-up to Privatisation following the Railways Act, 1993). These changes have had an enormous impact on the way that the railways are managed and following the last division into Train Operating Companies and Railtrack it appears that enormous differences are now emerging in the management and organisation of safety. A large number of divisions and interfaces have been introduced following the split of the Railways, such that a greater degree of cooperation and communication is required for the safe and effective running of train services. Communication also has a fundamental role internally within these companies to keep the workforce informed of the changes in the management of the organisation and in the management of safety under the new operating environment. It is crucial for the workforce to understand the new system for managing the railways and particularly the differences with regards to the management of safety and the role of the safety case. The safety culture within the railways appears to be entrenched in its militaristic past and the safety attitudes of its staff, so the effective communication of the new operating regime is required.

## 4.3 THE FRAMEWORK FOR MANAGING SAFETY

Within the Railway Group, the principal safety controls and procedures in operation during the transition from a unitary organisation to a multiple company environment, are:

- The Railway Safety Case Regulations, 1994 and Railtrack's Railway Safety Case;
- Group Standards;
- Railway Group Safety Plan and Objectives;
- Independent Safety Audit based on International Safety Rating Scheme (ISRS).

These initiatives provide a programme aimed at maintaining and improving health and safety performance and ensuring compliance. There is a reliance on the 'process' and compliance with regulations, rules, standards and industry performance targets. However, in spite of the systems in place to maintain the safe operation of the Railway network it is possible that increased commercial pressures on the franchised organisations could jeopardise safety. Audits can be used to assess the quality of safety management, and follow-up audits from the safety case will check that all the principles, processes and structure are in place. However these can not adequately test for the gap between the intended outcome of the Safety Management Systems and the behaviour which constitutes the organisational culture.

### 4.3.1 The Railway Safety Case Regulations, 1994 and Railtrack Railway Safety Case

The underlying principal behind the safety case was to ensure that safety was considered in the 'commercial' railway. This was partly in response to a recommendation from the Hidden Report on Incident at Clapham Junction (DoT, 1989). Preparing a safety case serves two main purposes to:

1. give confidence that the operator has the ability, commitment and resources to assess properly, and effectively control risks to the health and safety of staff and the general public; and
2. provide a comprehensive working document against which management, and also the acceptor (Railtrack) and the HSE, can check that the accepted risk control measures and safety management systems have been properly put into place and continue to operate in the way in which they were intended.

Generally a safety case should set out systems of rules, regulations and standards. It is a demonstration that all the hazards a company is likely to encounter have been identified, that systems are in place either to prevent those hazards occurring or

mitigate their consequences; and that a management system is in place which enables objectives to be met, performance to be monitored, and for the entire system to be auditable.

The success of a Safety Management System is dependent on those within the organisation whose task it is to comply with the systems. It is therefore essential to consider the impact of the Safety Management System on the people who have to enact these systems, through consultation and active participation and through consideration of the established safety culture. The boundary of acceptable behaviour within an organisation is largely determined by the prevailing safety culture. Hence acceptable behaviours under the safety culture may affect the acceptability and the degree of compliance with the safety case. It is important therefore for operators to consider whether the culture and the associated behaviours correspond to that prescribed by instructions, mission statements and recommended procedures. So the question of safety case effectiveness depends on the extent to which a Safety Management System reinforces behaviours which conform to official policy, and difficulties will arise when accepted behaviours deviate from official policies.

A safety case is a necessary condition for granting an operating licence which is required for the company to be incorporated. The safety of the rail network requires the workforce to comply and cooperate with to mechanisms in it. The first company to develop a safety case was Railtrack. Railtrack prepared its Safety case as a demonstration of its competence to control the infrastructure. As infrastructure controller, they will assume and discharge the responsibilities of the infrastructure safely, as specified in their safety case. Railtrack formally took control of the UK's national mainline railway infrastructure from April 1st, 1994. All other Railway Group companies have to comply with the requirements and specifications of Railtrack's Safety Case to ensure the safety of the infrastructure. The Railway Group includes Railtrack, train operating units and companies (e.g. Thames Trains, Intercity WestCoast), station operating companies, infrastructure service units, rolling stock leasing and train engineering servicing companies. The Safety case prepared by Railtrack is based upon:

- the adoption of mandatory Railway Group standards by all parties operating on, or undertaking any activity, on Railtrack's infrastructure. So Railtrack will ensure that all companies operating within their infrastructure will adopt and comply with Railway Group standards;

- maintaining or improving the safety performance of the Railway Group, for passengers, employees and the general public. For example making sure that safety performance is a key consideration in the management of the railways;

- that in the process of organisational change, Railtrack will apply the process developed by British Rail for the validation of organisational change;

- the application of the communication principle known as the 'cascade' from Railtrack to all parties in the Railway Group. This will be particularly useful in the implementation of policies, plans, objectives and safety cases;

- "Operator's" Railway Safety cases will be closely examined to ensure they operate the rail network safely;

- a rigorous Railtrack Safety Management System will be devised modelled on best UK industry practice, and will also cover contractor safety arrangements;

- risk assessments will be conducted to allow the application of modern techniques to devise strategies to control Railway Group activities utilising British Rail's operating experience;

- it is essential that those within the Railway Group understand the necessity of compliance with the contents of Railtrack's Railway Safety case.

(Based upon Railtrack, 1994).

Railtrack's safety case crucially describes the ways in which Railway Group member's plans, objectives, standards and performance can be validated, accepted, monitored and audited, so that safety on the network can be assured. Hence Railtrack's special role is concerned with the safety of other train operators and ensuring that Train Operating Companies do not import risks onto the infrastructure. Railtrack's duties also include ensuring safety cases are acceptable, and that they adequately assess and control risks. Train operators are audited by Railtrack to ensure companies are complying with their safety cases and check that adequate control measures are taken.

### 4.3.2. Railway Group Standards

These are mandatory standards devised for various activities within the Railway industry. The standards cover a wide range of activities offering both guidance and standards to be achieved. They vary from Drink and Drugs Policy, to Leptospirosis and Noise Policy. Within Railtrack's safety case a statement is made confirming that

all companies comply with the Railway Group standards. These basically provide the standards to which the companies work, is particularly for the operational sides of the organisation.

### 4.3.3. Railway Group and BR Safety Plan and Objectives

These are published annually by these bodies and specify the safety plan and supporting objectives. For Train Operating Units who are wholly owned subsidiaries of the British Railways Board and members of the Railway Group they have to develop their own safety plan and objectives and attempt to achieve the objectives set by the Board.

### 4.3.4 Independent Safety Audit (ISRS-based)

This is an audit carried out by British Railways Board to ensure that certain standards are achieved by the various operating companies. It is an approach based on ISRS. The efficacy and success of these various control measures and management systems has yet to be demonstrated. The intention is that these measures will be sufficient to guarantee the safety of the railways in a privatised industry.

## 4.4 A TRAIN OPERATING COMPANY

The Train Operating Company studied was created on the 1st April 1994 as part of the process of breaking up British Rail (BR) into numerous separate companies. The sponsor organisation is one of twenty five Train Operating Units (TOU) which comprise British Rail's passenger network. In recent months these TOUs have become vested and become Train Operating Companies, and are now in the process of being franchised. The company employs over 1250 staff, and are "responsible for a passenger train service and for the management of stations".

### 4.4.1 A Train Operating Company: purpose and objectives

The Train Operating Company is solely in charge of running passenger services on its lines. Therefore its prime purpose is "to provide the preferred means of transport within its geographical area in an efficient, cost effective and unfailingly safe manner for customers, employees and the general public." This is reflected in their Mission Statement which states that the company:

> "will be an economically successful business now and in the future by providing the right levels of customer satisfaction"

The purpose of the organisation is supported by the key organisational objectives. These are to:

- "provide and foster a close and honest working partnership with our customers and their representative bodies;
- provide our employees with a fulfilling, challenging career which allows and encourages each individual to develop according to their motivation and capability. Our employees will be recognised for their value to the business and it is expected that they will maintain an individual and collective commitment to the aims and culture of the TOU;
- maintain and develop an open and proactive culture whereby all people working in the TOU (staff or contractors) feel enabled and empowered to report incidents, unsafe acts or conditions, with the confidence that such will be investigated and acted upon to the benefit of all concerned;
- provide a fair and systematic contracting relationship with our suppliers and Contractors, so that they meet our needs in a safe, cost effective and professional manner;
- fulfil our obligations to those parties with which we have a contractual or other working relationship."

This is achieved through the core functions of *"Production"* and *"Commercial"*, with specialist support services provided by *"Human Resources"*, *"Finance"*, *"Corporate Affairs"* and *"Compliance & Standards"*. These functions are briefly described below:

### 4.4.1.1 Production Function

The production function has responsibility for ensuring a train service operates. The production manager, therefore is responsible for turning the train specification into a service desirable to their customers. This is achieved by planning the train services, ensuring adequate access with Railtrack, leasing stock from Leasco, maintaining this stock, providing traincrew to operate this service, and monitoring and improving this performance where necessary. The production function consists of staff who fulfil these objectives including drivers, train men and women, carriage cleaners, and engineers responsible for the maintenance of the trains.

#### 4.4.1.2 Commercial Function

The principal task of the commercial function is to develop plans to maximise the Train Operating Company's financial position. The focus is therefore on sources of income and potential trade-offs, and potential investment. Specific activities include product development and planning where the specification of train resources are optimised with consideration of resource requirements and quality specifications; market analysis determining peak and off-peak demand and an evaluation of clear business threats and opportunities; advertising; and sales activities and retail. Retail are responsible for the management of stations under the jurisdiction of the company, and their other responsibilities cover revenue collecting - in the form of ticket office operation, revenue protection - in the form of ticket examination and the cleaning of stations.

#### 4.4.1.3 Human Resources Function

The human resources function is primarily in charge of personnel within the organisation including training, recruitment, and welfare arrangements for staff. Their safety responsibilities include provision of counselling for staff who need it, and providing adequate training for staff to fulfil their duties in a safe and responsible manners.

#### 4.4.1.4 Corporate Affairs

This function is in charge of public relations with the organisation. They have responsibility for communications within and external to the organisation, and publish internal communiqués and release information to the press. In the event of an emergency they are also in charge of liaising with external organisations, in particular the media, about the incident.

#### 4.4.1.5 Finance

The Finance function is in overall charge of finance within the company. They are responsible for providing adequate resources for the management of safety within the organisation.

#### 4.4.1.6 Compliance and Standards

This function is primarily responsible for developing safety systems for the company and auditing these to ensure compliance. This Train Operating Company is the only Railway Company with a representative of safety at executive management level. Their

primary responsibility is the development and continued maintenance of the safety case as a living document.

## 4.5 SAFETY MANAGEMENT

### 4.5.1 Safety Validation Document

The safety validation process was devised as a result of the recommendation from Hidden stating that "BR shall require that any future reorganisation shall be properly planned, effectively resourced and implemented to an agreed timetable which takes account of all relevant problems" (DoT, 1989). This is valid for all organisational changes, and was fundamental to the restructuring of the Railway industry. The purpose is to ensure that no degradation of the safe running of the industry occurs as a result of the change. The objectives of the validation process are to:

- "ensure that an organisation and its arrangements have been set up to manage the risks arising from its activities;
- provide an independent check against safety 'black holes';
- assist in the maintenance of safety performance during the transition to, and subsequent operation of, the new organisation."

As part of the restructuring of the Railways industry, every part of the former British Rail that have changed their safety responsibilities will have undergone the safety validation process and will have been issued with a safety validation certificate. Before a safety validation certificate is issued Railtrack have to be satisfied that the organisation concerned has a good understanding of the risks involved, that it has an adequate safety management system and that it is adequately resourced with competent staff in the relevant disciplines. After implementation the organisations are audited to ensure that they are complying with the requirements in their own documentation. The Train Operating Company prepared a Safety Validation Document to demonstrate to Railtrack their acceptance of safety responsibilities. This document detailed the systems and procedures which were set in place for the operation of the Train Operating Company, stated the company safety policy and defined safety objectives and supporting statements of responsibility from key members of the organisation. The Train Operating Company will be audited on their Safety Validation Document prior to submission of their safety case to Railtrack. Acceptance of their safety case is affected by their compliance with their Safety Validation Document. Train Operating Companies will operate in accordance with

their safety validation commitments until a Railway Safety case is required, when the organisation moves fully into the private sector.

### 4.5.2 Safety Case

Each Train Operating Unit (TOU) requires an Operator's Licence from the Rail Regulator before it is allowed to become a Train Operating Company and run trains. A number of conditions will have to be satisfied before such a licence is issued, one of which is the acceptance of its safety case by Railtrack (as infrastructure controller) as required by the Railways (Safety Case) Regulations. The precise content of the Railway Safety case depends upon the type of operator involved (e.g. infrastructure controller, train operating unit etc.) but the aim should be that when the arrangements and procedures described in the safety case are implemented that they will comply with its responsibility for safety on the railway system and its duties under the Health and Safety at Work Act 1974. The safety case should demonstrate:

- "an understanding of the risks that the operation will bring onto the railway system and how they will be properly controlled;
- an understanding of Railway Group standards applicable to their operation;
- knowledge of the competencies required of key safety personnel within the organisation and methods to assess such standards;
- organisational support for these key personnel;
- that all interfaces between the proposed operation and neighbouring operations have been considered and their management clearly allocated."

If any changes are made to the Safety case it must be submitted to Railtrack for acceptance before any changes are implemented. Any proposed changes must be notified to Railtrack's Safety and Standards Directorate who will be responsible for maintenance of the safety case and informing the Health and Safety Executive of changes. Train Operating Companies must comply with certain safety standards set by the Railways Board, and attain certain levels of performance specified within the British Railways Board Safety Plan. Thus each member of the Railway Group will have an individual plan specifying a range of actions relating to specific activities and risks, each will reflect the Board's objectives and how they will be achieved.

The policy statement made by the Chairman, Sir Bob Reid of the British Railway's Board when the industry initially broke up into its constituent parts, emphasises the

fact that all employees must take responsibility for safety (BRB, 1994). The statement further commits the Board to:

- "provision of a safe railway service;
- fully cooperate with Railtrack in the development and maintenance of systems to ensure the safe running of the railway;
- improve safety in the design, installation and maintenance of our rolling, the infrastructure and other buildings by staff and suppliers;
- train and supervise managers, staff and contractors to ensure safety;
- adopt the best safety practices from other industries
- meet the legal requirements of health and safety on the railways."

The British Rail Safety Policy statement is supported within the Safety Plan by a series of objectives against which the organisation can be measured. Hence the a Train Operating Company's Safety Management System is based on systems and procedures to achieve these key objectives, which cover the following classes of operation: passenger, employee and contractor, and safety programme. Within the British Rail statement of general arrangement for health and safety (BRB, 1994) safety is defined as "avoidance of death, injury or poor health to its customers, employees, contractors and the general public, caused by occupational accidents, incidents or hazards, also avoidance of damage to property and the environment".

However the Safety Management System is represented to external organisations in the form of the safety case. Within the organisation though safety is managed through the local safety policy, the safety programme, rulebook and safety briefings.

### 4.5.3 The Train Operating Company's Local Safety Policy

This is a document available at many work locations and is intended as guidance of how safety is managed at a local level. The document includes sections on: Policy Statements, Arrangements for Health and Safety, Risk Assessments, Safety Audit Plan, Safety Briefings, Safety Critical Posts, Examination of Competency, Personal Protective Equipment, Delegated Duties, Responsibilities and Locations, Fire Precautions Managers, Fire Safety Management, Accident Reporting, Code of Practice for Accident Notification, Local Staff Safety Representation, and On-call schedule. It therefore covers the various requirements and responsibilities of staff and is accessible to them.

### 4.5.4 Safety Briefings

The idea is that briefings are cascaded down throughout the organisation, either monthly or bi-monthly, hence their name 'cascade briefs'. The process starts with the Management Safety Group, which is a monthly meeting convened every month and attended by the Executive Board Members (functional managers). The members are the Commercial Manager, Production Manager, Compliance and Standards Manager, Corporate Affairs Manager, Human Resources Manager, Finance and Procurement manager and the Managing Director. Terms of reference for these meetings are published and the minutes of the meeting are distributed to the attendees of the meeting. Items are actioned to specific individuals and progress on action items are reviewed at subsequent meetings. The next level down involves the functional managers briefing their team, and this being passed down through the organisational layers.

A pack known as 'Briefing Matters' is distributed through the cascade. The pack covers both business and safety matters and is formulated at the level of higher management. The intent being for consistent communications throughout the hierarchy.

### 4.5.5 Rulebook

The rulebook is the guidance given to all operational staff on the railways. It has been in existence for many years and is the source of the established rule-based culture. The rulebook provides dos and don'ts for many eventualities on the railway track, and the importance of certain protocol and rules. It is regarded by many as the source of safety on the railways. Consequently the procedural risk assessment based safety management system is disregarded by operational staff, who have worked in a highly prescriptive environment.

## 4.6 RAILWAY SYSTEM

Perrow (1984) considers organisations as dynamic entities with technological and social systems which can be broken down into two bipolar variables: linear versus complex and tight versus loose coupling, as discussed in Chapter Three. Linear interactions are those in expected and familiar production or maintenance sequences and those that are quite visible even if unplanned. Complex interactions are those of unfamiliar sequences and either not visible or not immediately comprehensible. Tightly coupled systems have more time-dependent processes; the way a product is made is invariant; there is little slack and safety devices are built into the organisation leaving little room for improvisation, especially when other features of a tightly coupled organisation are present. Perrow went on to map the location of these types of

organisations on a diagram with two axes detailing these, which is reproduced in Figure Two.

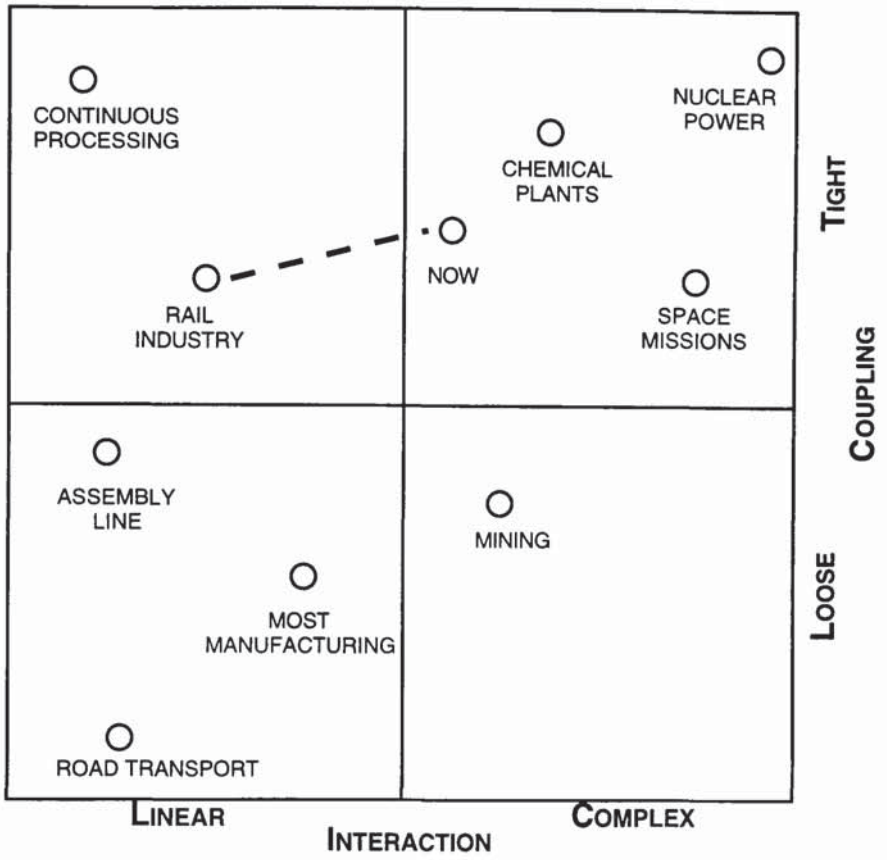


*Figure Two: Interaction/Coupling Matrix*

Figure Two is derived from Perrow's book 'Normal Accidents' (1984). I have modified the position of the rail industry on the basis that with privatisation and the move from a unitary monolithic environment to that of a multi-company environment, the complexity of the industry has increased. Hence I believe that the industry as a whole has moved into the top right hand quadrant as its complexity has increased due to the differing priorities and actions of many interlinked companies which has resulted in an environment which according to Perrow would be more prone to 'Normal Accidents'. As a result of the industry becoming more dangerous in terms of tight coupling and increased complexity it is more important for the successful implementation of the safety case and continue organisational learning within this environment.

Certain challenges the Train Operating Company face are the lack of discretion they have over resolving safety issues in their work environment, in particular where risks and hazards they consider unacceptable are not viewed as a high priority by the infrastructure controller, or the party responsible for its resolution. Additional challenges relate to the fact that the only cost that the Train Operating Company can

greatly influence is the wage bill. This has resulted in a period of aggressive down-sizing and continual reorganisations, and as a consequence uncertainty within the organisation.

# CHAPTER FIVE

## *Philosophical Methodology*

> But certainly, for us who understand life, figures are a matter of indifference. I should have liked to begin this story in the fashion of the fairy-tales. I should have liked to say: "Once upon a time there was a little prince who lived on a planet that was scarcely bigger than himself, and who had need of a friend..." To those who understand life, that would have given a much greater air of truth to my story.
>
> Antoine de Saint-Exupery, The Little Prince.

The purpose of the methodology section is to describe the steps undertaken to conduct the research, and justify their use. The methodology of the research is in three chapters. This is the first and describes the philosophical justifications for conducting the research. The second is part results and part methodology as it describes the research process and some of the key organisational events in the form of a narrative is shown in chapter six. Chapter seven forms the procedure chapter of the thesis and describes how the research was conducted.

## 5.1 INTRODUCTION

The research is primarily explorative and hence benefits from the use of qualitative research as will be discussed. Blumer (1969) states that the goal of exploratory research "is to develop and fill out as comprehensive and accurate a picture of the area of study as conditions allow". He also argues that such a study should be flexible in its research procedures, that is not be constrained by specific techniques or preconceived notions about theoretical categories and hypotheses.

The perspective taken for this methodology is of a research process, rather than a description of discrete research stages, and reflects the relationship between aspects of research design, data collection and data analysis. The justification for this was summarised thus:

> "The research process, then, is not a clear cut sequence of procedures following a neat pattern, but a messy interaction between the conceptual and empirical world, deduction and induction occurring at the same time."
>
> (Bechhofer, 1974)

It is hoped within this section to explain the different steps and stages in the procedures, and the false starts, and link them to the research findings and the

modified purpose of the research. Fundamentally this methodology seeks to justify the less-than-perfect solution chosen for research by describing the false starts and problems encountered in the research process.

## 5.2 ASSUMPTIONS AND RATIONALE

This thesis is based on an association with a Train Operating Company and is an investigation into the impact of communications on the safety culture in a rapidly changing environment.

The company studied are a member of the former nationalised railways industry British Rail. Its suitability for a research project included:

- a history of research conducted with the organisation and its predecessor over many years;
- undergoing a period of immense change, both to its staffing arrangements and the management of safety;
- moving from a unitary organisation to a limited company in a complex multi-organisation environment.

The study was limited by time constraints. When the research project was negotiated with the company a period of relative stability was expected for two years until April 1996 (the date scheduled for franchising). On this basis the research period was set from June 1994 to October 1995.

Access to the organisation was granted to the researcher. The researcher was effectively given 'carte blanche' within the company as her introduction to the company had been via the Managing Director. It also allowed greater access to top management meetings and other events which otherwise would have been inaccessible.

The original intention of the research had been to examine the role of communications in affecting safety performance in the organisation. However it was quickly realised that the incidents underpinning the safety statistics in the organisation were too small, and the organisation too new for past statistics to be used reliably.

## 5.3 METHODOLOGICAL JUSTIFICATIONS

A qualitative research methodology was chosen for the current study for a number of reasons. Justifications for the selection of the research methodology was based both on the inappropriateness of quantitative research and the suitability of qualitative methodologies for the research topic. Summarised these were:

- the stakeholders of the research (the Managing Director and Functional Managers) deemed questionnaire analysis inappropriate for their company;
- the company was suffering from 'questionnaire fatigue' resulting from earlier surveys and questionnaires;
- previous research studies within British Rail had yielded low response rates to surveys and questionnaires, resulting in unrepresentative and inconclusive results;
- exploratory research into the role of communications within a changing environment and its impact on organisational culture required a flexible approach to data collection and analysis.

Turner (1988) comments that until fairly recently the collection of qualitative data was considered idiosyncratic and archaic. However the recognition of weaknesses in surveys and questionnaires has heightened interest in qualitative methods. Turner asserts that qualitative research methods used to study organisational cultures, which are "of urgent and practical interest", has increased the acceptability of qualitative research (ibid.). Qualitative research is defined as research which produces findings not arrived at by means of statistical procedures or other means of quantification (Strauss & Corbin, 1990). Qualitative research methods may be used to:

> "uncover and understand what lies behind any phenomenon about which little is yet known. It can be used to gain novel and fresh slants on things about which quite a bit is already known."
>
> Strauss & Corbin (1990)

A qualitative research methodology was selected due to the rapidly changing political and organisational environment. The method was considered essential due to the complex pattern of organisational, work group, professional and interpersonal loyalties within the organisation and the rapid change the organisation was undergoing. The intention was to identify the effects of change within the organisation and upon its safety culture. A further advantage of this approach lies in the fact that interviews are

familiar to people and provide an accessible mode of data collection, and people like to share their views and opinions on issues. These features of open ended questioning within semi-structured interviews was summarised thus:

> "They are flexible; they allow the interviewer to probe... they enable the interviewer to test the limits of the respondent's knowledge; they encourage cooperation and help establish rapport; and they allow the interviewer to make a true assessment of what the respondent really believes."
>
> Cohen & Manion (1980)

The main research tools in this study were observation and the 'qualitative research interview'. A qualitative research interview is:

> "an interview, whose purpose is to gather descriptions of the life-world of the interviewee with respect to the interpretation of the meaning of the described phenomena"
>
> Kvale (1983)

The definition is expanded further, "neither in the interview phase nor in the later analysis is the purpose primarily to obtain quantifiable responses". To meet this goal these interviews will have 'a low degree of structure imposed by the interviewer; a preponderance of open questions; a focus on specific situations and action sequences in the world of the interviewee' (Kvale, 1983). Within a qualitative study the interviewee is seen as a participant in the research, actively shaping the course of the interview rather than passively responding to the interviewer's pre-set questions (King, 1995), this can be contrasted to quantitative studies where questions are asked in a closed manner to allow quantitative analysis.

The disadvantages of this research methodology include the time-consuming nature and time limitations of the research process. Interviews are tiring and time consuming to conduct and analyse. As a guide, King (1995) recommends that a maximum of three one-hour interviews should be conducted in a day. Further, participants may be difficult to locate, and may not cooperate in the study. An additional problem lies in the massive quantities of data collected and the difficulties of analysing the data.

Observation, as a data collection method, is essential to ensure all organisational experiences are collected. The technique was used in both a passive observer and a participant observer context. It was not always possible to control the organisational context. For the study of the cascade briefing a passive observer context was adopted and a pro-forma developed for ease of coding the meetings. The primary disadvantage of observation is the effect of the observer on the research context.

The methodological choice is reinforced by Schein (1992) who recommends a combination of fieldwork methods from ethnography with interview and observation methods from clinical and consulting work as the ideal choice for the study of organisational cultures. Whilst Nash (1989) used observations, interviews, collections of documents and historical analyses to examine how the culture that workers in modern organisations "construct and reproduce in their daily lives is adapted to, and in turn affects, the operation of the global corporation in their community." Consequently the methodology is supported by previous researchers of organisational cultures.

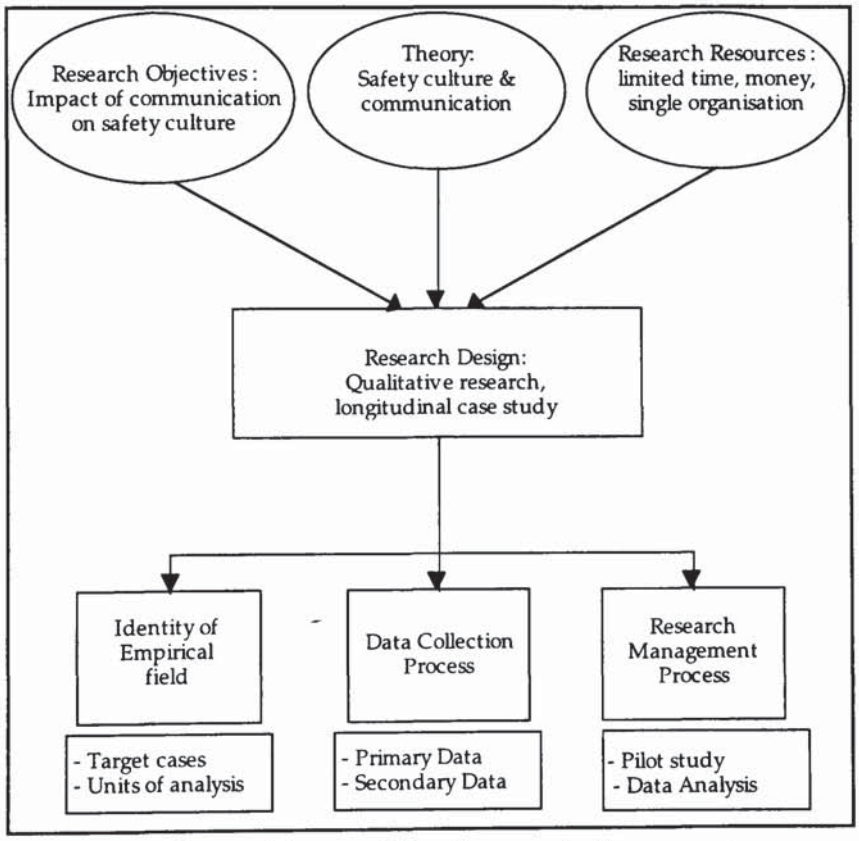


*Figure Three - The Research Process*

Figure Three shows the various stages covered in the initial development of the research design. The research design was developed on the basis of the research objectives, the theoretical perspectives and models, and by the research constraints, i.e. availability of time and resources. Having decided on the research design, the identity of the empirical field (a Train Operating Company) was chosen, and the cases for study and the concepts to be analysed were decided. The Data Collection Process is the various steps carried out to analyse the case. Whilst the Research Management Process involved consideration of a pilot study, the technicalities of data analysis and how the

results would be reported back to the client organisation and be represented in the thesis.

Miles & Huberman (1994) stated that when devising a research plan, it is necessary to consider a number of criteria. These questions are tackled with respect to the research plan below:

*1. Is sampling relevant to your conceptual frame and research questions?*

In the current study it was decided that disproportionate sampling should be used to ensure representation of key interest groups within the organisation. Disproportionate sampling involves over-representing some sections of the organisation, and as a consequence under represents other factions of the organisation. It was considered necessary due to the relatively low proportion of managers within the organisation. This sampling method was only used at levels below executive management, and is discussed in greater detail in Chapter Seven.

*2. Will the phenomena you are interested in appear ? In principle, can they appear ?*

This question highlights the specific difficulties when researching organisational cultures, and particularly safety culture. Safety is difficult to measure, and culture is a nebulous (and argued-over) concept. Hence a research question attempting to link safety performance with factors relating to safety culture is impossible. It was therefore decided to focus on the role of communications within the organisation as a facet of its organisational culture and its effect in facilitating or preventing transmission of information.

*3. Does your plan enhance generalizability of your findings either through conceptual power or representativeness ?*

It is hoped that building matrices as a data analysis strategy will enhance generalizability of the research results. Further it is proposed that triangulation of the data sources, with objective data, will further enhance the reliability of the data. With regards to the representativeness of the data the research is based on a single organisation undergoing a period of immense change and hence extrapolating the results to other organisations will only be possible with caution. It is speculated that those conclusions relating to communication strategies and safety culture could be representative to many organisations.

*4. Can believable descriptions and explanations be produced, ones that are true to real life ?*

I believe that the data sources gathered via the methodology and its subsequent triangulation (Webb et al, 1966) will reflect organisational life. The findings will also be

compared to previous research, both general and specific to provide further validation of the research findings.

*5. Is the sampling plan ethical, in terms of such issues as informed consent, potential benefits and risks and the relationship with the informants?*

These factors relating to ethical research were observed, with subjects given the choice whether to participate. An assurance was given to all participants that in the final report they would remain anonymous.

These criteria were considered and deemed acceptable with reference to the planned research.

## 5.4 CONSTRAINTS OF RESEARCH

This section covers those issues concerning the role of the researcher, problems with conducting fieldwork and general problems with organisational research. These will be described below along with strategies for remedying them.

### 5.4.1 Role Of Researcher

For the research to be conducted it was necessary for the researcher to be accepted within the organisation. This was achieved through attendance at meetings and introductions with key participants within the organisation to develop a rapport between the researcher and her participants. The intention was for the researcher to be viewed in a non-threatening manner and for all participants to cooperate. This aim was assisted by the researcher being female in a predominantly masculine environment, and a well documented "macho" culture (e.g. Bate, 1994). The role of the researcher was enhanced by commitment to the research from the Managing Director which helped achieve involvement by participants within the organisation.

### 5.4.2 Problems with Fieldwork

The main problem with conducting fieldwork concerns the lack of control that the researcher has on organisational events. Consequently the researcher had to adopt an opportunistic stance and accept invitations and introductions as they arose. This entailed accepting invitations and interviews on the spur of the moment, and few opportunities were refused. This was further necessitated by difficulties of weather, influenza outbreaks and redundancies which lead to uncertainties and change in the research process. Changes in the organisational structure made follow-up interviews difficult. It is also recognised that as the researcher enters the research field it is

difficult to remain independent and avoid presumptions, values, theoretical and political preferences entering the research work. Hence it was impossible for the researcher to remain a wholly objective observer of the organisation as some attitudes, and affiliations within the organisation were seen as more interesting and significant than others.

A further problem with fieldwork relates to the problems of causal inference. As the researcher has no control over organisational events and limited knowledge of events, both past and present, drawing conclusions and causal links is difficult. There is also the problem of administrative control, which is the researcher's inability to dictate events as the organisation runs at its own pace.

As Yin (1994) accounts achieving reliability depends on ensuring that the operations involved in the study could be repeated with the same results. However the opportunistic methodology used in this study makes full reliability impossible as it depends on particular circumstances and events that occurred in the period of the case study. So as Bresnen (1988) states a more reactive and unstructured type of approach is:

> "a double edged sword: on the one hand, it yields valuable information and insights in a way in which a more pre-planned and structured approach does not; on the other, you lose the benefits of a more or less exactly comparable database that you would otherwise have obtained using the latter approach."

Bresnen further asserts that when researching organisations to obtain reliable and valid data relies on "some degree of cunning, deviousness, opportunism and persistence on the part of the researcher". This was certainly the case in this study.

An associated problem relates to the nature of fieldwork and investigating people's experiences, as Toft and Reynolds (1994) stated "there is a 'real world' in which people have experiences, and these experiences can be shared with others through some form of communication." This is confirmed by Brown and Sime (1981) "that people can and do comment on their experiences, and that these commentaries are acceptable as scientific data." This is further confirmed by the notion proposed in Davidson's 'Principle of Clarity' (1973) that people typically tell the truth more often than not. Hence unless evidence exists to contradict what people say it should be assumed that they are not deliberately lying or distorting information.

The current research study is a single case, and therefore does not consider interdependent activities and hence is limited in the extent to which conclusions can be drawn.

## 5.5 QUALITATIVE METHODOLOGY

The following section details various principles which were followed in the development of the research methodology, this includes development of the question set, the purpose of conducting a pilot study, how to record interview responses and data, and an outline of the justifications for conducting the research.

### 5.5.1 Development of Question Sets

The following points were incorporated into the question set, and is based on various guides to developing question sets (e.g. Oppenheim, 1992; King, 1995). It is important:

1. to begin with general and interesting questions - the reasons for this relate to helping subjects relax, to avoid responder set (this is where participants give the answer they think you want to hear), and to engage the interest and attention of the participant;

2. for the question set to be logically ordered, so there should be no abrupt changes of topic;

3. for probes to interrogate topics further, and to illustrate certain topics. For example probes such as "Anything else?", "Could you tell me more of your ideas about that?", "What do you mean?", "Do you have an example about that?" can be used to ground the data and remove the participant from purely abstract responses;

4. it is also important to avoid multiple questions, where more than one question is asked within the frame of one question;

5. questions should not be leading, that is those questions which impose the researcher's perceptions on the participant.

### 5.5.2 How to record responses

A decision has to be made about whether interviews are tape recorded or written down, and whether verbatim notes are taken or paraphrased notes. Tape recorded interviews have a number of advantages, the main being a record of all the material. However there are a number of pitfalls, these include: time required to transcribe tapes; a noisy environment; and participants' objection to being taped. There is also a possible conflict with confidentiality. However note-taking during an interview is time-consuming, and can prevent detailed follow-ups and probes. King (1995) notes that

some participants find it flattering to have someone paying that much attention to what is being said. The pilot study revealed that note taking and editing out "ehhs" and "ahhs" would be most appropriate for use in this study; as participants appeared reluctant to be recorded on tape and found the format of the interview interesting.

### 5.5.3 Methodological Procedure

The methodological procedure is described in chapter seven. Within this section the philosophical and methodological points are described for the various stages of the research.

#### *5.5.3.1 Familiarisation*

The stage of familiarisation was an essential part of the research process. The reasons for this were twofold. The first relates to the refinement of research ideas and concepts. The second concerns the role of the researcher in the organisation and in the subsequent research. Prior to conducting the research the role of the researcher within the organisation needs to be considered, it was described thus:

> A person may drink
> (participate in the native culture)
> drink heavily
> (participate, fully, in depth)
> get drunk
> (temporarily go native)
> or become a drunk
> (go native and stay in that condition)
> Freilich (quoted in Wadel, 1991)

In the early stages of the research it was realised that the researcher needed to become a participant and have access to backstage events. The familiarisation exercise involved the researcher attending many organisational events including meetings, visiting the various work locations, and investigating the general nature of the railway business. The primary objectives at this stage were to develop an understanding of:

- how activities within the Train Operating Company are conducted;
- how work instructions, feedback, and consultation messages are transmitted;
- how the company is organised and structured;
- how information pathways should operate within the organisation;

- the role of the safety management systems and how these were devised, developed and communicated; and
- the vocabulary and jargon used by individuals within the company.

The familiarisation exercise involved a detailed examination of the company's Safety Validation Document and the processes concerned with the development of the safety case; attendance of a number of safety audits at stations and at the maintenance depot; a day on the footplate with drivers and a traction inspector; and interviews with the executive management team to gather opinions concerning safety, communication and the organisation. Meetings were chosen as a particularly useful way for gathering information on the organisation and allowed the researcher to meet individuals within the organisation and to gain their cooperation and assistance for later stages of the research.

### *5.5.3.2 Pilot Study*

The underlying philosophy behind conducting a pilot study relates to evaluating a question set prior to widespread application. Hence the purpose is to test every aspect of a question set to make sure that it works as intended. Oppenheim (1992) believes that a pilot study can aid in the wording of questions and also with procedural matters such as how to contact participants, the ordering and sequencing of questions and the reduction of non-response rates.

Following the pilot study, the question set was analysed. The analysis was based on three criteria, these were: was the question asked, what was the quality of response (in terms of answering the question fully), and was the question understood, or did it have to be explained. As Oppenheim (1992) states a pilot study should be used to deal with the comprehensibility of the questions, and make modifications to items that require them. In the current example it was found that people did not like making choices, they preferred not to answer questions in black and white and could always find examples which broke the rule; this ruled out the use of too many closed questions. Most participants enjoyed the experience of being interviewed, and note-taking was found to be acceptable due to the variety of work locations and difficulties finding quiet interview locations. Overall the participants were eager to help and gave full and comprehensive answers wherever possible.

### *6.5.3.3 Study One: Examination of the Organisational Culture*

This stage was a horizontal study of the organisation. Participants from all levels of the organisation were interviewed with regards to their attitudes and opinions about safety, communications and related organisational issues.

The interview followed the following structure:

1. Introduction: the researcher introduced herself, explaining the purpose of the interview, assuring confidentiality and gaining permission to take notes.

2. Warm-up: this involved easy, non-threatening questions at the start of the interview to help the researcher and the participant settle down.

3. Main question set: this involved application of the question set in a 'loose' manner, and capitalising on certain topics by pursuing leads, and trying to ensure that all relevant questions are covered.

4. Closure: involved a thank-you and good-bye. The interview closed with an opportunity for the participant to make any additional comments. Occasionally this occurred following the closure of the formal interview, and these were noted subsequently.

The duration of the interview varied depending on the verbosity of the participant. This ranged from as little as twenty minutes to a couple of hours: the norm was about forty-five minutes. The researcher went to the individual work locations and spoke to participants whilst they were on shift. Traincrew were interviewed in their rest breaks.

### *5.5.3.4 Examination of Cascade Briefing System*

This part of the research involved a detailed examination of the cascade briefing process. The familiarisation exercise and pilot study had revealed that the cascade was the principal mechanism for communications within the organisation. It was cited as the mechanism for transmitting information to the workforce and was a two-way process, with information going up and down the hierarchy. The system had been newly introduced into the organisation, and was formalised within their safety case as the mechanism for communicating safety and business messages throughout the hierarchy. The aim of this stage was to attend briefing sessions throughout the hierarchy and observe how the system worked in practice.

#### *5.5.3.5 Study Two: Follow-up to Study One*

The final study was a follow-up to Study One, the intent being to examine change within the organisation. A modified version of the question set in study one was used, and an attempt to interview the same personnel was made.

## 5.6 DATA ANALYSIS PROCEDURES

Prior to analysis the data needs to be transcribed and the researcher familiar with its content. There are a number of approaches to analysing data, Miller and Crabtree (1992) propose four. These are:

### 5.6.1 Quasi-statistical

This involves turning the data into quantitative units which can be manipulated statistically. The most commonly used method is content analysis (Weber, 1985). This involves selecting a unit for measurement and then categorising each unit found. Statistical analyses can then be carried out comparing individuals or groups on the distribution of units across categories. So content analysis is within the quantitative tradition of hypothesis testing, generalizability and the separation of the researcher from the data for the sake of objectivity.

### 5.6.2 Template

This is the idea of comparing the data to a 'codebook' consisting of a number of categories or themes relevant to the research questions (Crabtree and Miller, 1992). In this analysis method the codes can either be developed *a priori*, with regards to existing knowledge, or a posteriori, that is developed from initial exposure to the interview data. This method is qualitative as the codebook can continually be modified throughout the research based on exposure to the research data, and the themes will be interpreted qualitatively rather than statistically.

### 5.6.3 Editing

Those methods where "the interpreter enters the text much like an editor searching for meaningful segments, cutting, pasting and rearranging until the reduced summary reveals the interpretative truth in the text" (Miller and Crabtree, 1992). Grounded Theory, developed by Glaser and Strauss (1967), is an example of this method. Key features of this technique is its cyclical nature whereby interpretations emerging from a theme are continually compared with original textual data.

### 5.6.4 Immersion/ Crystallisation

This is where researchers immerse themselves in the research subject over a prolonged period of time, and produce an account of their feelings through analytical reflection and intuitive crystallisation of meaning. Moustakas (1961) used this technique in his study on loneliness where every possible source of material is used e.g. qualitative research interviews, conversations, observation, introspection, and reading material on the topic area (e.g., autobiographies, poetry).

Consideration of the research question and the type of data collected means that an editing method was considered the most suitable technique for analysis of the research material. This was because the technique allowed the context of interview material to be maintained. However content analysis will also be used to review documented materials, in particular the text of the briefing packs.

In summary the research methodology will principally be qualitative, although some features of the methodology will be quantitative (e.g. attitude survey, content analysis). These quantitative aspects will be used to support the qualitative data which forms the bulk of the research.

# CHAPTER SIX

## *Narrative Account of Research*

> "Forty Two !" yelled Loonquawl "Is that all you've got to show for seven and a half million year's work ?"
>
> "I checked it very thoroughly", said the computer, "and that quite definitely is the answer. I think the problem, to be quite honest with you, is that you've never really known what the question is ... Once you know what the question is, you'll know what the answer means."
>
> Douglas Adams, The Hitchhikers Guide to the Galaxy.

The purpose of this chapter is, in the form of a narrative, to describe the progress of the research from its inception to completion. I hoped to cover all key organisational events and to describe the organisation and the progress of the research. It is in the words of Kunda (1992) intended as a "Confessional of Sorts", where the nature of the research, and organisational events are elaborated. Therefore the chapter will cover the problems of conducting the fieldwork, the problems with conducting safety research, and the lack of measures in the organisation. This chapter will be organised according to a sequence of events to which the researcher was exposed, and her interpretations of these and their influence in achieving the research intent.

## 6.1 RESEARCH

In October 1993 I registered for a PhD in the Health and Safety Unit at Aston University. My research was concerned with investigating the role of communication and mechanisms for the dissemination of health and safety information within an organisation, to establish the quality of communication as a predictor of safety performance. Prior to joining the Health and Safety Unit I had carried out exploratory research into safety culture with British Nuclear Fuels Limited as a Master's student. One of the key findings from this research (Horbury, 1994) was the emphasis placed on communications and perceptions of communication on the organisational safety culture. As a result I decided the focus of my research should be on the role of consultation and participation processes within an organisation and their influence on its safety culture, and consequently its safety performance. I was particularly interested in the introduction of new systems and modifications to systems, and the role of communications in implementing change.

The choice of the Train Operating Company as the setting for the study was largely pragmatic. First it offered an accessible setting for a detailed case study in an enthusiastic organisation, and secondly it was undergoing change in its safety systems and was developing a safety management system. The term enthusiastic is used to refer to an organisation willing to be 'researched'. The Managing Director of the company invited the researcher to the organisation to conduct research into safety culture. The second reason regards the ongoing change in the UK Railway Industry as it moved towards privatisation and the massive legislative change imposed in terms of the Railways (Safety Case) regulations, 1994. These regulations serve two main purposes:

> " a. To give confidence that the operator has the ability, commitment and resources to properly assess and effectively control risks to the health and safety of staff and the general public; and
>
> b. To provide a comprehensive working document against which management, and also the acceptor and HSE, can check that the accepted risk control measures and Safety Management System have been properly put into place and continue to operate in the way in which they are intended."
>
> (HSE, 1994).

The HSE continue in their guidance notes that:

> "preparing a safety case and keeping it up to date requires a systematic approach to health and safety. Such an approach can pay dividends, by helping operators to eliminate unnecessary duplication of effort or 'reinvention of the wheel' and to use resources to their best effect. It can also help operators to identify potential gaps in health and safety protection, and more effective ways of countering risks".

Little research has been conducted investigating safety culture within organisations. The majority of the research has been reductionist in nature with outcomes being aggregated scores of safety culture in an organisation. The current study aims to investigate the effect of communication on the safety culture in a period of organisational change and the role of participation and consultation.

The literature review revealed a number of research projects in the railway industry looking at its organisational culture, as well as safety culture. These research projects had been conducted prior to the break up of British Rail when it was a large monolithic organisation, and results from these would provide a useful benchmark for the findings of the research.

## 6.2 RESEARCH STRATEGY

I was interested in documenting a process of organisational change, management actions in implementing this change and its subsequent effects on the organisation's safety culture. The research strategy chosen was based on the idea of a detailed case study conducted longitudinally. Consequently I accepted that statistical generalisations would be difficult as the research was primarily explorative.

## 6.3 METHODS

At the outset of the research I decided that interviews, documentary sources and direct observation would be used to develop a database built from information gleaned from these sources. The emphasis was on qualitative research to develop a rich and detailed description of change within the organisation.

At the outset a heavily structured and detailed question set was devised. However, following the pilot study I realised that interviews were more constructive with a less formalised structure giving participants more freedom of response, and providing more useful information. So semi-structured interviews and conversations with the participants was chosen as the main method for gathering information. Further information was gathered and documented from attendance at meetings and other organisational events (see Appendix A). Attendance of these meetings provided an extremely efficient method of staying up-to-date with organisational happenings and developing strategies for dealing with these. Meetings also formed a point of contact with the organisation and allowed me to become familiar with individuals in the organisation and to chase up leads that were considered relevant.

## 6.4 A TRAIN OPERATING COMPANY

This part of the chapter will describe my experiences with the Train Operating Company (this term is used to maintain the anonymity of the organisation). It will describe a number of organisational events and happenings which affected the research context. I also hope to provide a personal interpretation of the organisational culture and its safety culture on the basis of these events.

I obtained access to the Train Operating Company through good fortune. Professor Richard Booth, my university supervisor, lectured on the topic of communications and safety culture as part of the Strategic Safety Management course given to all senior managers within British Rail. This provided an introduction to a suitable organisation.

It was decided I should spend three months familiarising myself with the organisation, its management and its personnel prior to devising and presenting a research plan to the company's Executive Management Safety Group, which was its executive committee for managing safety.

### 6.4.1 Familiarisation Process

The initial period of the research (1st July to 30 September, 1994) was spent with the Compliance and Standards department of the company. Compliance and Standards are the professional safety department and were involved in the development of organisation-wide systems and auditing safety systems within the organisation. Their raison d'être was to develop a safety management system consistent throughout the organisation and to remove divisions between the various functions within the organisation. An example was the systems for the Control of Substances Hazardous to Health (COSHH); seven different systems were identified following the company's inception in April 1994, where obviously one consistent system was desirable.

In this stage of the research I shadowed the audit team, attended numerous safety case meetings both within, and external to the company, as well as attending Executive Management Safety Group meetings. These allowed me to become familiar with the various work locations and the 'feel' of the organisation. I quickly realised that being 'seconded' to Compliance and Standards would not prove to be an effective means of collecting data and that I would need to develop my own contacts with functional heads to gain access to their departments. In part this related to the organisational attitude towards Compliance and Standards and the danger of being viewed as 'an information seeking representative of Compliance and Standards'.

During this familiarisation stage I realised that the organisation as a whole did not seem to be 'happy' - it had many functional divisions. The workforce was overwhelmingly opposed to privatisation and change was being imposed with no consultation or participation by any of the parties affected by the process.

Following this process I devised my research strategy. This was presented to Executive Management Safety Group, and was given the formal go ahead. Feedback from the meeting suggested that the research was important for the organisation. The research strategy was based on the idea of developing communication matrices and identifying failures in the process, and then to vertically trace communications. The presentation at the Executive Management Safety Group allowed me to be introduced to the organisation and to meet the executive management team, who now had an understanding of the aims and objectives of my research.

Following this meeting I made appointments with the functional managers to get hear their perceptions of the organisation and its challenges, and to get their permission to conduct the research within their areas of responsibility. Further contacts were also made. One of these was with a Retail/Marketing Consultant who had just completed a three month examination of the company's retail outlets to identify their potential for improvements. A day was spent travelling round the company railway lines with him. His perceptions of the company was that the commercial workforce were not suited to their jobs, they had a 'not my responsibility' mentality and their morale was low due to impending privatisation.

I was also invited to give a brief presentation to the Commercial Organisation Meeting in order to involve the middle managers within that function and gain their commitment to the research. I was also now considered a member of the Executive Management Safety Group and was invited to, and received minutes from, these meetings. I was fortunate because I could attend these meetings and the members did not appear to modify their behaviour in my presence. This acceptance was further verified by the Finance Manager asking if I was the new management trainee (he did not attend safety meetings).

I spent a day on the footplate accompanying a traction inspector. I travelled round the company's lines in the driver's cab, on a variety of routes on different sorts of trains. This provided a valuable opportunity to gather drivers perceptions and to develop an understanding of the demands and challenges in driving a train. Overall these experiences were invaluable to me and assisted me in both the development of the research strategy and in its implementation.

### 6.4.2 Safety Case

I decided to select the development of the safety case as an example of an organisational strategy being developed and implemented within the organisation. Hence the communication mechanisms used in its development and subsequent implementation would be examined to see their effect on the safety culture. The safety case was being developed by a manager and his assistant within the Compliance and Standards function. Much of the safety management system and description of the company was extracted from the Safety Validation Document. Further requirements for the safety case included risk assessments would be purchased from a railway consultancy specialising in safety cases. These consultants developed risk assessments of various organisational hazards for the organisation. At various stages in the development of the safety case, the safety case manager presented his progress to

Executive Management Safety Group, as well as to the Head of Compliance and Standards.

In the middle of December 1994, I was invited to a two-day meeting for an 'Executive Review of the Safety Case', one week prior to the submission deadline for the document. The meeting was composed of the Managing Director, the six functional managers, two Compliance and Standards managers, an external consultant and myself. The Safety Case manager was absent owing to illness, and his organisational replacement was a consultant from the railway consultancy who had developed the risk assessments. The purpose of the meeting was to review the safety case document and to prepare the presentation that would be given to Railtrack. The meeting split into three groups with a remit of reviewing the technical, human and safety components of the document. Halfway through the morning it was realised that the safety case was fundamentally flawed, and that the couple of days would be better spent rewriting, rather than attempting to work on the existing document. Out of the eleven reviewing the document, I was the only person with the safety case guidance notes; a request for more copies was made to Company Headquarters.

At this time the mood of the group was both despondent and angry. Anger was initially directed at the absent Safety Case manager. However one of the functional managers observed that the Executive as a group had agreed the safety case three or four times; and that it was becoming a habit the executive group having to rewrite things over a couple of days. (It later transpired that the organisation had undergone a similar experience in the production of their Business Plan, where six person months has been expended in developing the plan, and it was subsequently rewritten in forty-eight hours.) Groups were assigned to rewrite various sections of the Safety Case document.

Both during the writing of the original safety case and its subsequent revision there was no consultation with the workforce and therefore it did not provide the desired opportunity to examine patterns of consultation and participation in the decision-making processes of the organisation. I realised at this stage that if the organisation did not consult with the workforce on this issue, where safety case guidance recommended consultation (HSE, 1994), then it was unlikely consultation was a process within the organisation. Prior to submission of the safety case document the head of Compliance and Standards held a meeting to brief the safety representatives on the content of the safety case, and the purpose the document served. It was perceived by most health and safety representatives that the organisation was solely paying lip service to the concept of consultation and that they could not change the document. Nonetheless the

health and safety representatives were satisfied that their role was recognised by higher management in the organisation.

### 6.4.3 Research Process

Following my experiences with the safety case I conducted a series of pilot interviews with personnel selected at random from broad categories of staff. The question set was developed and devised from an understanding of the organisation gained in the familiarisation exercise and the types of information required. The questions focused on organisational linkages, so relationships with management, peers and external organisations (e.g. Railtrack, Trade Unions), as well as detailed questions about safety and its management were asked. Ten pilot interviews were conducted throughout The company's lines at a variety of work sites and functions. Participants were willing to answer questions, and most were open and honest in answering questions, often surprisingly so. Assurances were given to participants on anonymity, and confidentiality, and my neutrality emphasised. The exception was one participant who was monosyllabic, because he thought I was from the Human Resources Department and was there to give him his notice. It took a lot of reassurance to convince him that I was not a threat. This incident however reflected the insecurity within the organisation, and led to a revision of the interview protocol to ensure this type of misunderstanding did not recur. I also gave participants the option of involvement.

Following the pilot study the question-set was modified and applied to the organisation in the Spring of 1995 and in the Winter of 1995/6. The findings from this stage will be elaborated in the results chapters of the thesis. One point to note is that a report detailing findings from Study One was presented to the organisation. One manager believed that I had been "talking to organisational undesirables", I pointed out the sample was random. As a direct result of my report to the organisation the briefing process was redesigned and safety representatives were given training in risk assessments.

## 6.5 ORGANISATIONAL EVENTS

The remainder of this section will narrate various episodes I experienced in the process of conducting my research. These episodes were not part of the formal methodological procedure and as such are not 'reliable data', but I feel they provide useful leads and insights into the organisational culture of the railways and its safety culture. These episodes will be presented below in a series of descriptions broken down into these categories: Communication Failures, Safety Incidents, and Functional Divisions.

### 6.5.1 Communication Failures

These are incidents where communication failures were involved in events within the organisation, seen as relevant to the organisational culture of the organisation. The term 'communication failures' is used here to describe events where a failure to communicate effectively, in my opinion, has been pivotal in the development of the organisational culture.

#### *6.5.1.1 Refusal to Work Policy*

The organisation, within its safety case had a section which detailed a "Refusal to Work" policy. The underlying philosophy behind the policy statement is to protect employees so that employees have the right to refuse to work in situations they consider unsafe. The Executive Management Safety Group made a decision not to communicate this policy to staff. The reasons stated were that staff could not be trusted, and it was licence for them to cause havoc.

An incident associated with this management philosophy relates to drivers. Drivers have the power to refuse to drive a train they consider unsafe. Part of the drivers' culture relates to their responsibilities of driving a train safely and punctually, and a feature of this relates to "prepping" (checking) a train prior to putting it into service each day. If they find a fault they assess its severity and its potential for harm and if it can not be remedied they refuse to take the train into service. The Train Operating Company run diesel slam door stock on some of its lines which are over thirty years old. It is apparently now impossible to find replacement windscreen wipers for these vehicles. Drivers consider it part of prepping the vehicle and ensuring its drive-worthiness to check the windscreen wipers. In a number of instances defective or inoperable wipers have been found and drivers have refused to take the train into service. Management take this as evidence of drivers being unreasonable, and lacking commitment to the company. Fundamentally due to limited trains when a train is not taken into service it means that the passenger service will suffer, hence the drivers actions are viewed as detrimental to the business, which will result in both lost revenue and compensation costs. In this organisational culture the Refusal to Work policy is not communicated.

#### *6.5.1.2 Chair of Executive Management Safety Group*

The Train Operating Company holds safety meetings at an executive level at four-weekly intervals, which the functional head of safety (i.e. head of Compliance and Standards) chairs, with the meeting members being Functional Managers and the

Managing Director. This arrangement had been in place for eight months from the inception of the company until the presentation of the safety case to Railtrack. At the review of the safety case with Railtrack, a question was raised about the chair of this safety meeting. The Managing Director defended the decision of not having himself as the chair, saying that it worked and that it seemed sensible having the head of safety chairing the top level safety meeting. A follow-up question was "What if he overrules one of your decisions and puts safety before the business?" The response was that this had not arisen and was not foreseeable. Despite the strong defence, the documented chair of the safety meetings is the Managing Director in the safety case document. However in practice they are still chaired by the head of Compliance and Standards.

### *6.5.1.3 Moving the Traincrew Depot*

A failure in communications occurred just over two years ago, shortly before the company was broken into separate companies. This issue is briefly mentioned as it is still referred to within the company and is seen as indicative of the disdain in which traincrew are held (according to the traincrew). It was decided to close the traincrew depot at one location and move the staff to purpose-built accommodation twenty miles away. This decision was made without consultation with staff and was leaked to the newspapers before staff could be briefed regarding this matter. The consequences of this decision are far reaching and relate to both the business, organisational morale and staff/management relations. Consequences of the decision relate to a deterioration in train service as trains had to be cancelled due to a lack of guards, increased stress in the workforce and a decrease in morale linked to a lack of trust in management. Prior to the announcement of the decision to close the depot, rumours were rife in the organisation. A number of individuals asked higher management about the depot closure and higher management denied it. A former manager documented evidence informing management of the predicted outcomes from closing the depot which included the enormous loss of staff, and the recruiting and training costs of new conductors. No reply was received. The way this change was implemented still has an effect on the organisation and is viewed by staff as an indictment of poor management

### *6.5.1.4 General Communication Failures*

During my research, I was party to some indications of communication blockages within the company. These included being invited to meetings where key individuals were deliberately not included; and being party to union decisions against management. An example of this related to the unions closing down a sidings where trains were stabled at night. A couple of the lanes (tracks) had been closed by the

unions and management had not made any attempt to improve these. This resulted in the unions closing the whole sidings due to the deterioration of working conditions. When the lane closure was announced at the Executive Management Safety Group, the management team were shocked and surprised by the decision, but the Managing Director stated that the sidings were in a shocking state, that they should never have got into that condition and as a company they should have closed the sidings down. A further issue related to how my research findings should be presented to the organisation. A letter was sent to me summarising a previous meeting and the following is a quote from this letter; "we discussed the format of your final report, we established that it should open with the note-worthy aspects of the Company's performance. In the body of the report we said that if any negative aspects of our performance were observed this would immediately followed by a recommendation along the lines of, "the Company should consider....."""

A survey was conducted with British Rail in the final quarter of 1992. A Questionnaire was distributed to all members of the company and the findings presented to the organisation according to work location and management grade. The findings of this research were not distributed to company staff. I was given access to the report on the understanding that I would not reveal the results of the report to anyone. A participant referred to the study as an example of how management never changed. On the basis of the survey, British Rail made a corporate video for the introduction of the "Organising for Quality" initiative. All senior managers of the organisation stated their commitment to change, and a sample of the workforce were interviewed to state their perceptions of problems within the organisation. It was interesting to note from the video how little had actually changed over the three years, the same complaints were voiced three years later during my research. A small point relates to the fact that the organisation has had a documented problem with communications for many years and that there is no identifiable change in management's strategy or the workforce's perceptions.

### 6.5.2 Safety Failures

A number safety incidents are described below. The first two incidents were major events in the organisation and had a large impact on the organisation. The first was a major accident, whilst the second was a major operating incident.

#### *6.5.2.1 Accident to a member of the Heavy Cleaning Gang*

A member of the Heavy Cleaning Gang (HCG) had an accident using a woodchip shredder to clear waste ground at one of the company's station. The machine guarding

had been removed and when feeding wood into the machine, the victim's hand got caught and a couple of his fingers were severed.

Management reported the investigation of the accident to me as the Heavy Cleaning Gang colluding and identifying poor training (i.e. not the victim) as the cause of the injury. The entire Heavy Cleaning Gang identified training as the cause and could all name the training company and the detailed syllabus of the course. Management countered that the Heavy Cleaning Gang staff couldn't even name which days they had worked the previous week, which was evidence of their collusion, and that it was their fault. The investigation returned to the site of the accident and examined the chippings. They could identify where the guarding was removed because of change in the size of the chippings. So the conclusion was that the guard had been deliberately removed.

It transpired that an improvement notice from the Health and Safety Executive had been issued two years previously relating to unsafe conditions with the Heavy Cleaning Gang. This improvement notice required the organisation to conduct risk assessments and adopt control measures. The action from the HSE regarding the latter incident resulted in a further improvement notice requiring a risk assessment on all Heavy Cleaning Gang activities within a certain time period, otherwise a prohibition notice would be issued.

Following the accident the Heavy Cleaning Gang were forbidden by management from using any power tools, including vacuum cleaners. Their duties were limited to painting and cleaning. Their role prior to this change had been as general handymen, ranging from putting up signs, to gardening and maintenance issues. This was not well received by either the Heavy Cleaning Gang or local management, "a silly knee-jerk, panic reaction". It was further cited as ridiculous by Retail staff where delays resulted in the wait for outside contractors on tasks prohibited by the Heavy Cleaning Gang.

The Heavy Cleaning Gang feel persecuted by the organisation. A meeting I attended revealed them to be suffering from low morale, a lack of job satisfaction and a very strong disregard for organisational policy. Personal Protective Equipment (PPE) was where this issue was most obvious. The gang believed it was too hot to wear PPE, as full overalls, hat and goggles were required for painting stations, and refused to wear them. They further asserted that since management refused to buy them sun hats and sun screen they had no regard for their health and safety. The manager insisted that supervisors ensure their teams complied with their PPE demands - however there was little organisational motivation to comply. Conversation with members of the Heavy Cleaning Gang (HCG) revealed that they attributed the cause of the incident to be unpreventable human error, and that they were being punished unnecessarily. As a

result of this management are viewed as impotent and foolish for reacting in an extreme and dramatic fashion.

A few days after speaking to the Heavy Cleaning Gang I had a conversation with one of the managers of the gang, and we were talking about safe systems of work. I asked whether he believed that the gang complied with Personal Protective Equipment arrangements and he said without a doubt as they're always being told about it. This seems typical of the organisation which believes that because a system exists or that people have been told, that compliance results (a view initially gathered when I shadowed compliance audits).

### *6.5.2.2 Collision between a passenger train and a freight train*

A Freight Train was ninety minutes early and standing at a signal. A passenger service passed through a restricted signal and ran into the back of the stationary freight train. There were fifteen minor and five major injuries resulting from the incident.

I was fortunate enough to be invited as a guest to the Joint Panel incident inquiry hosted by Railtrack. It was a joint inquiry chaired by Railtrack with the panel composed of the Train Operating Company, Railfreight and various Trade Union representatives. Interviews were conducted with those involved in the incident from the signalman, the movements manager, traction inspector and the drivers of the two trains. The guard of the passenger train was unable to attend the inquiry as he was suffering from injuries sustained during the incident. The conclusion of the inquiry after a day of interviewing witnesses was "the driver passed a signal at danger - ultimately it is his responsibility for the train" (Chair of panel). The investigation ignored the fact that the guard, who also has responsibility for checking the signal, gave two on the bell, implying to the driver that the signal was clear. And that the lines where the incident occurred were prone to vandalism and trespass. The driver in an account of his actions said "there were youths mucking about just next to me, guard gave the tip and I set off".

Another feature of this incident relates to the driver's experience of that line and how usually there are no trains in front of him, and he had never before (in 10 years of riding that line) been stopped at that signal. Consequently the driver did not expect a train to be in front of him, or for the signal to be red, and his expectation was further reinforced by the actions of the guard (e.g. two on the bell). During the course of the investigation it was revealed that the freight train had been diverted and had been stopped at the signal as the bridge was not strong enough for the freight train and a

passenger train. Some representatives at the panel wanted this point raised. However the Railtrack chair deemed this inappropriate.

As a result of the investigation the driver was disciplined. This was seen as inconsistent within the organisation as two other similar SPADs (Signals passed at danger) had occurred in a two week period prior to this incident and no disciplinary action was taken against these drivers. So the only driver disciplined was where injuries and financial loss had occurred. This message therefore reinforced driver's perceptions that you should not get caught, and if you get caught then the driver will always be blamed.

Both these incidents described were unfortunate and their effect on the railway culture dramatic. It should be noted the role of human error in these incidents and the emphasis placed on blame. This is consistent with the organisational culture where a strong emphasis is placed on individual accountability.

### 6.5.3 Functional Divisions

The next section in this narrative describing organisational events, communication and safety incidents, is highlights interfunctional differences in the organisation and their subsequent influence on safety culture and relationships within the organisation.

The Train Operating Company comprises two main functions: Commercial and Production, and a number of support functions: Compliance and Standards, Human Resources, Corporate Affairs and Finance. The function Compliance and Standards was developed to overcome functional divisions in the management of safety, and to develop the organisation's safety management system and its safety case. At the outset it was noted that there was a lot of duplication in the safety systems for the different functions, and the Compliance and Standards function set about developing and implementing organisation-wide systems. The Commercial and Production functions had systems in place which they had designed for managing the specific risks in their work environments. Below I note a number of incidents which were revealed to me in the period of my research where functional differences emerged and the effect these had on the organisation.

#### *6.5.3.1 Verbal Abuse Forms*

Early in my research it was revealed that within the Commercial organisation they had a very large problem with verbal abuse from customers. Within British Rail verbal abuse is classed as an incident and as such needs to be reported. Verbal abuse is also important as it provides an indicator of the wider problem of assault on rail staff by

customers and trespassers. To deal with this issue the Commercial function developed a form to collect all the information considered relevant on the topic. The form was a single side of A4, and noted the location, what was said, time of day, and circumstances. The Commercial organisation found the information very useful and it was used to gauge the severity of verbal abuse and to devise strategies to avoid it. The form was well thought of and used widely throughout the function.

Within British Rail companies all rail incidents and accidents need to be entered onto a computerised data base, British Rail Incident Management System or BRIMS. It is a requirement of all former British Rail companies to report and enter incident/accident and ill-health data into this database. It was realised by Compliance and Standards that the Commercial organisation were not complying with the system documented in their safety case which required that all incidents, accidents and ill-health occurrences have to comply with the Accident Reporting flowchart. The requirement involves two report forms; one which the victim fills in and the other the supervisor fills in (five sides of form). The Commercial function complied with this policy with regard to all incidents and accidents except verbal abuse. Since they were not fully complying with the requirement they were informed that they had to abandon their verbal abuse system and fill in an accident form and phone the accident hotline.

The response from the Commercial level was disgust at the highest level, to confusion at the lowest. As far as they were concerned an effective system had been changed for the sole purpose of making life more difficult, and that the information collected did not serve any purpose other than compliance, it did not allow preventive strategies to be devised or risky locations or situations be identified. Most individuals interviewed in the Commercial organisation acknowledged that they would no longer report incidences of verbal abuse as it was considered too time-consuming and they saw no results from the report. An exception to this was found with the Revenue Protection Inspectors who were reporting everything. The underlying reason for this compliance related to a change in working practices which left the Revenue Protection Inspectors feeling vulnerable and at risk and consequently wanted management to notice and take action. The senior manager responsible for the function viewed this compliance as annoying referring to Revenue Protection Inspectors as "bloody whingers".

### *6.5.3.2 Audits*

Compliance and Standards as a department was established to manage safety responsibilities within the organisation consistently. One of the key components of this was the concept of 'Internal Audit', where the Compliance and Standards department had responsibility for both financial and safety audits within the whole organisation.

Audit is a strong tool within the Rail Industry and each company is audited by Railtrack, the British Railways Board and external organisations. These audits are either organisation specific, so Railtrack audit the organisation on their compliance to their safety case, whilst the British Railways Board audit them according to the International Safety Rating Scheme (ISRS). Audit teams are not well regarded throughout the organisation, because of the way audits are carried out.

A system existed within the Commercial organisation for auditing safety systems. The system had been developed on over a period of years in response to the requirements of the function and the different demands in terms of legislation. Consequently their audits were tailored to specific work locations and activities within the organisation. The Production function did not have specific audit systems however, they had methods for checking their various work activities. Overall responsibility for safety, prior to the development of Compliance and Standards, was at the level of individual functions to manage their 'own' safety.

AD Little Consultants were commissioned to develop specific topic question-sets, based on generic principles for British Rail. These question sets were then adopted by The Train Operating Company for application. These question sets looked at Booking Offices, and such issues as safety noticeboards, tripping hazards and housekeeping, the Train Maintenance Depot with topics such as lifting tackle, Permit to Work and systems in the organisation's stores. The auditors liaised with line management as well as supervisors when conducting these audits. Upon conclusion of the audit the auditor fed back the audit findings to line management and these were agreed upon in this 'close-out' meeting.

These audits were not well received in the organisation for a number of reasons, but related mainly to three factors. The first is, the already mentioned, audit fatigue, and a lack of interest in the outcomes of the audit. The second relates to a resentment that the responsibilities formerly held by their function are now managed by Compliance and Standards. Compliance and Standards are disliked because of their lack of operational experience and safety being managed by a function external to themselves. This is exacerbated by the fact that the question-sets were non-specific and therefore were not targeted towards the specific work locations and tasks. This includes general disregard for the function, and Compliance and Standards are viewed as "experts, an ex is a has-been, and a spurt is a drip". The third problems relates to the role of management. Higher management aware of the responsibilities associated with audit results decided that audit results had to be approved by functional management before they were published internally. This therefore resulted in a two tier system, with line

management agreeing to one thing in the close out meeting and functional management having the power of veto over the audit report. As a result audits do not achieve the desired result. They are viewed as inappropriate for the organisation and cause further conflict. Another complaint relates to the lack of money to resolve problems identified in the audits.

### *6.5.3.3 Team Briefings*

The next issue which caused interfunctional divisions related to team briefings. Within the Commercial organisation and traincrew a strong system was in place for team briefings (see Chapter four for organisational description). A decision was made by functional management for a consistent brief to be disseminated through the organisation, this involved a brief being devised by functional management with a focus on business issues and safety as a further topic. Prior to this the Commercial function's system involved formulating a safety brief and handout, along with local agendas devised at a local level.

Consequently there was a certain amount of resentment concerning the revised briefing system. The workforce considered the system to be driven from the top down and being derived from Company Headquarters. A further objection in the commercial function related to removing the handout which previously had been distributed to all and gave information on safety and, gave case studies and examples from the rulebook. So specific safety information contained in these handouts was lost, and there was a lot of resentment. As one individual said "hey diddle diddle Compliance and Standards get involved and it's not a good system anymore". So there was much resentment as they perceived that their good system had been replaced by an inferior one. Consequently less effort and attention were paid to briefs.

### *6.5.3.4 Retail Bulletin*

The Retail Bulletin was a magazine published monthly by the Commercial organisation which covered a range of topics from business and safety to operational and maintenance problems. It was viewed by people in the Commercial function as a useful document which assisted them in performing their duties. The publication was stopped when an issue contained an article about Stress. The article had been written by a replacement editor, who covered the usual editor's holiday and covered the various symptoms of stress and implied they were common within the Train Operating Company. This issue landed on the Managing Director's desk and as a result was stopped. The Retail Bulletin is still referred to and missed although it ceased to be,

more than a year ago. Its demise is widely perceived as a refusal to face up to reality, and its loss viewed as contributing to poor communication in the Commercial function.

### *6.5.3.5 Driver at Risk*

The concept of 'driver at risk' is a management system to examine driver exposure to incidents. Drivers who have experienced accidents and incidents are observed and monitored to ensure their driving behaviour is not modified as a result of incidents experienced. A system was in place in two out of the three Traincrew depots, and was viewed as a useful tool by both drivers and management. Compliance and Standards decided that a driver at risk system should be implemented organisation-wide. Their system was implemented without prior consultation with management and drivers about the previous system. The new system was imposed and was poorly explained. It was therefore ineffective and resulted in the suppression of information on incidents and accidents. Consequently a system which had previously worked was replaced by a weaker and less successful system. Drivers resented the new system and saw it as a threat to their job security.

These difficulties between old systems being modified and replaced by new systems developed by Compliance and Standards is exacerbated by the fact that staff within Compliance and Standards are generally viewed as under-qualified clerical staff with no operational experience. They are therefore viewed as inexperienced and unqualified to talk about detailed operational issues. There was also a belief that Compliance and Standards were more concerned with databases and statistics than the actual individuals involved in incidents. I relate two examples on this topic. The first was from a Revenue Protection Inspector who had been subject to two incidents involving knives, as a result of these two extremely serious incidents he had several weeks sick leave. He visited Company Headquarters to investigate the possibility of counselling to overcome his ordeals. His perception was that he was treated as though he was worthless and Compliance and Standards were more concerned that his accident was not recorded on the computer database as a Lost Time Accident. The second related to a serious near miss between two trains. A production representative asked Compliance and Standards whether they wanted to attend the incident, their response was "Is it on Compass yet?" (this is an incident database used in the company). So instead of being concerned with operational safety and offering assistance, their chief concern was whether the incident had been recorded.

These divisions within the organisation and the difficulties with Compliance and Standards continued, with many redundant systems, and intentional violations of the documented safety management system, until the Managing Director threatened

disciplinary action against anyone who continued to violate procedures, including managers. The threat of discipline lead to grudging compliance and a dismantling of duplicated systems.

## 6.6 THEMES

Many of the above descriptions are based on fortuity and the importance when studying organisations of being in the right place at the right time. A further benefit was that I attained a greater understanding of the dynamics of the organisation and the observed internal conflicts and events in real time, as opposed to post hoc interpretations of events. My close links allowed me to develop a greater understanding of the organisation, and to reach a coherent explanation of events. Hence as the next chapter explains, the methodology was emergent and strongly dependent on events and circumstances. I hope the above description has highlighted the organisational culture and its associated safety culture. It is important to remember the organisation was new and in a period of development and change when this research was conducted. However I think the vignettes described are illustrative of the conflicts within the organisation and the difficulties encountered when incorporating new systems on a resentful organisation. Many of the examples relating to safety reveal the influence and role of management/workforce relations as well as functional divisions, and hence highlights the importance of strong communication channels to weaken the resistive elements in the organisation.

# CHAPTER SEVEN

## *Procedure*

I keep six honest serving men
(They taught me all I knew)
Their names are what and why and when
and how and where and who
I send them over land and sea
I send them east and west
But after they have worked for me
I give them all a rest.

The Elephant's Child, Rudyard Kipling

This chapter makes explicit the various procedures used in conducting the research. It is intended with Chapter Five, the "Philosophical Methodology" which details the underlying methodological justifications, to make explicit the full research methodology. The words of Kipling are used as a basis for explaining the process and procedure of the research. Both the data collection and data analysis stages of the research are described.

## 7.1 RESEARCH PLAN

Within this chapter the research procedure is described as a series of five sequential and discrete steps. These are described in the context of the data collection and data analysis and are linked to the display of the results. However it is important to acknowledge that the study was not conducted in these discrete stages, and that data was collected over the duration of the research project for each of the various stages. The project was initially for a period from June 1994 to October 1995, however this was extended until the end of February 1996, to account for adverse weather conditions and strikes which interrupted the data collection process. The five stages were: Familiarisation, Pilot Study, an Investigation into Safety Culture (Study One), Investigation of the Cascade Briefing Process and the Follow-up to Study One (Study Two). It was hoped that the data would be triangulated from these various stages to highlight the impact of communication on the safety culture of the organisation. The key stages to the research are displayed in Figure Four overleaf:

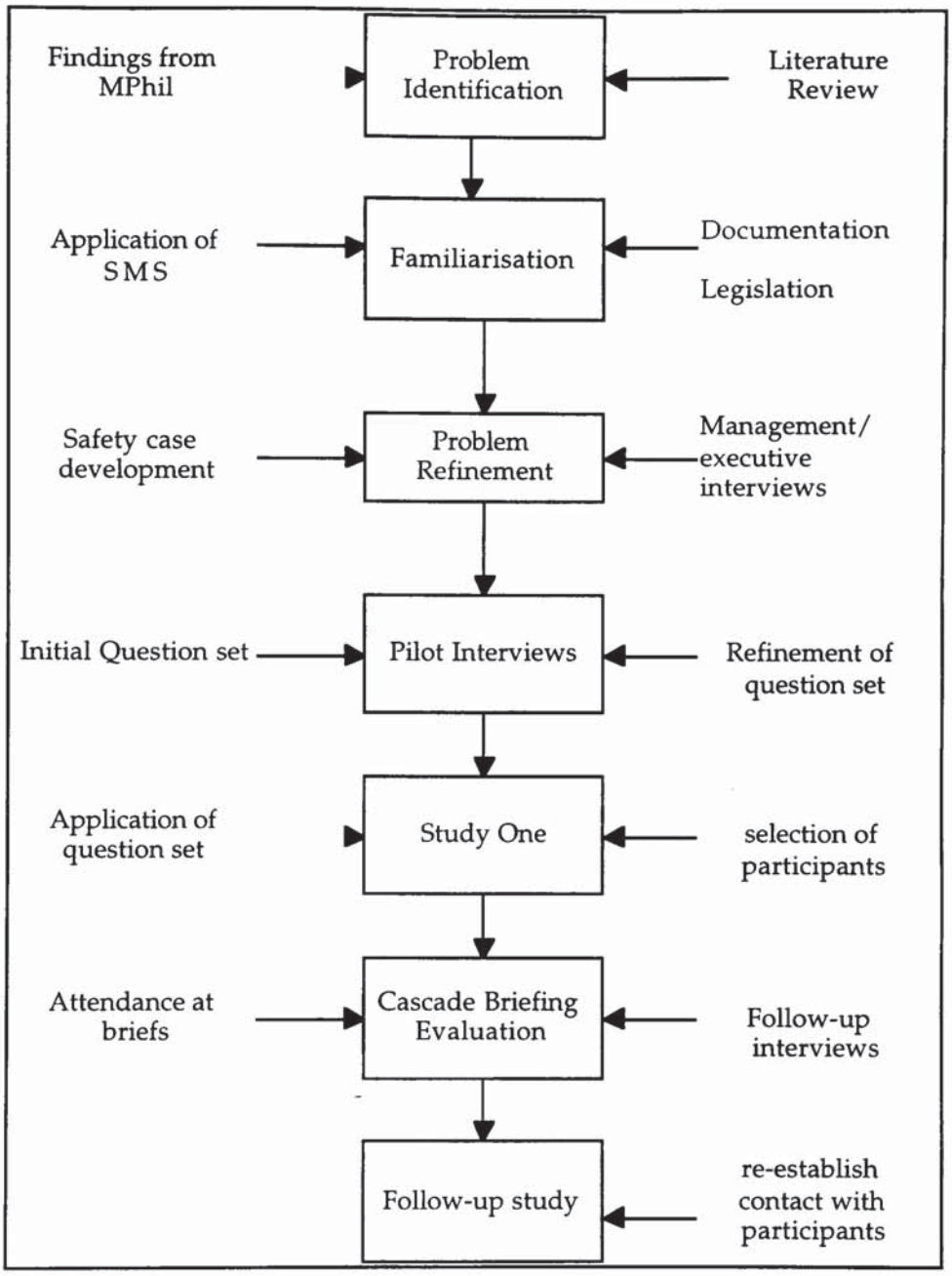


***Figure Four: Research Stages***

Each stage of the research was influenced by the previous stages, and findings from these fed into the research process. In the following sections these stages of the research and its data analysis will be described. The research was conducted over the timeframe displayed overleaf, the timeline is in quarters and numbered, so 3/1994 is the third quarter in 1994 (e.g., 1 July- 30 September) etc.

| RESEARCH STAGE | 3/1994 | 4/1994 | 1/1995 | 2/1995 | 3/1995 | 4/1995 | 1/1996 | 2/1996 |
|---|---|---|---|---|---|---|---|---|
| FAMILIARISATION | | | | | | | | |
| PILOT STUDY | | | | | | | | |
| STUDY ONE | | | | | | | | |
| CASCADE BRIEFS - STUDY TWO | | | | | | | | |
| STUDY THREE - FOLLOW UP | | | | | | | | |

| KEY | |
|---|---|
| Data Collection | |
| Data Analysis | |

*Figure Five: Research Timeline*

As can be seen from the above figure, data analysis was more time-consuming that the data collection stages. Some of the stages involved little data analysis and involved the consolidation of material rather than formal analysis. In this way the research process is similar to grounded theory in that data analysis and data collection are concurrent.

## 7.2 DATA COLLECTION PROCESS

The data collection process included making explicit the following:

- setting, i.e. where the research was conducted;
- participants, i.e. who was observed or interviewed with respect to roles and responsibilities;
- events, i.e. research stages, that is the topics and subjects observed or interrogated for the research.

These topics are described in the following sections.

### 7.2.1 Setting

The setting for the research was a train operating company within the former British Rail which operates passenger train services. The research frame was from June 1994 to February 1996. The organisational context was that of a former nationalised industry

being prepared for privatisation. Consequently the organisation was undergoing substantial change programmes including downsizing and bringing in outside managers to deal with these changes. Further changes were also undertaken including introduction of a safety management system and the development of a safety case.

### 7.2.2 Participants

It was decided that for the purposes of this study that participants would be selected from the Commercial and Production functions of the organisation (see chapter four for explanation of functions). These functions comprise the main operating functions of the organisation as well as the majority of the workforce; other functions act as support systems to them. Participants were assured confidentiality and clearly told the research aims, the stakeholder of the research and the research intent. A stratified sampling strategy was adopted for this research. This was to ensure that key interest groups within the organisation were represented, as otherwise management would have been under represented. The familiarisation exercise involved interviewing functional managers within the organisation. In the pilot study, participants from other functions were interviewed, who were selected randomly. Participants were selected randomly from the organisation charts for Study One, which investigated the safety culture of the organisation.

Participants involved in the cascade briefing sessions were approached following the functional manager's brief, either by phone or in person, and hence their selection was based on attendance at the brief. The researcher attended the top level management brief for each function and briefly summarised the remit of the research and requested interested parties to contact the researcher. Interviews conducted following the briefs were not always possible, especially where briefs were conducted away from work locations for example, conductors, drivers, trainmen and the Heavy Cleaning Gang.

Table Three, shown below shows participants in relation to numbers interviewed at each stage of the research, the organisational function they were selected from and the split between management and staff (where the term staff is used to denote any member of the workforce who is not a managerial grade). See Appendix B for greater detail.

| | Familiarisation | Pilot Study | Study One | Cascade briefs | Follow-up to study 1 |
|---|---|---|---|---|---|
| **Numbers** | 15 | 10 | 50 | 20 | 30 |
| **Functions** | All | Commercial & Production | Commercial & Production | Commercial & Production | Commercial & Production |
| **Staff (S), Mgmt (M)** | 15 M | 5 M, 5 S | 25 M, 25 S | 6 M, 14 S | 16 M, 14 S |

**Table Three: Research Participants**

## 7.2.3 Familiarisation

The initial period of research was in the first four months of the project where the intent was to become familiar with the way the organisation operated, the nature of its business and a feel for organisational personnel. This aspect of the research is described in the philosophical methodology. Features of this stage were incorporated into the research design e.g. organisational events, protocol for conducting interviews, awareness of key events.

The familiarisation process also involved a detailed literature review and an investigation of the North London Railways safety management system. A research diary is shown in Appendix A which lists the meetings and interviews conducted during the research.

### *6.2.3.1 Literature Review*

A review of available literature was made. Topics covered include:

- Organisational Culture
- Organisational Communication
- Organisational Learning
- Safety Culture
- Safety Management

The purpose of the review was to avoid repeating research that has already been performed; identify and structure the problem and set it within the broader framework

of earlier research; develop insights that might help in developing hypotheses and research methods; avoid misinterpretation of the results and finally to avoid omission of key references. The Literature Review of the research is contained in Chapters Two and Three of this thesis.

#### *7.2.3.2 Train Operating Company Safety Management System*

The organisation's safety system was interrogated through an examination of safety policy documents, the safety validation document and incident reports. The researcher also shadowed various members of the Compliance and Standards function who provide safety support to the organisation. The intent also was to get an understanding of the operating environment, and to understand the structure and organisation of the company. A summary of these findings are shown in Chapter Four.

#### *7.2.3.3 Interviews with Senior Management*

Interviews were conducted with the senior management team to gauge their perceptions of their organisation, including its strengths and weaknesses. An open ended question set was used to gather as much information as possible. Issues typically included, safety responsibilities, area of responsibility, safety challenges etc. These results are displayed in a summary table within chapter eight (section 8.1, Management's perceptions).

### 7.2.4 Development of the Question Set

The question set was developed from data collected from a number of sources including the question set used by Horbury (1994), academic and applied literature, exploratory interviews with key informants and observation of key activities in the organisation. This question set was then shown to peers and academic members of the Health and Safety Unit, and stakeholders and interested parties within the target organisation for refinement. Their comments and recommendations were incorporated into a revised version of the question set. The question set was then piloted on ten people within the organisation.

The question set covered the medium of communication, relationship issues within the organisation, the communication channels, and identification of barriers to information transmission, as well as questions concerning safety and its management within the organisation. The aim was to allow all subjects to answer questions and to voice their opinions about those facets of safety and control systems which concern everyone

within the organisation. See Appendix C for the question set used in Study One and the modified version used in Study Two (Appendix D).

For the pilot study participants were selected according to stratified random sampling, that is a cross section of the organisation, with individuals from the different functions and the different levels of the organisational hierarchy being contacted over the phone and asked to participate in the study. Ten were selected in total. The protocol of the interview explained the purpose of the study and described the pilot as a "run though", giving participants the opportunity to influence the study. The pilot study was taken as a learning opportunity, participants commented on the legitimacy of the study, the wording and content of the questions, the length of the interview and its utility within the organisation.

## 7.2.5 Study One

### *7.2.5.1 Participants*

Fifty qualitative research interviews were carried out to develop a picture of the organisational culture including opinions about management, safety and barriers to communication within the company. Disproportionate sampling was used to ensure key interest groups were covered, and only two of the functions. It was decided that approximately 8% of the chosen functions would be interviewed at this stage in the process, as opposed to 8% of the organisation randomly selected. Subjects were chosen on the basis of their work location, their job role, with the intent that key groups would be represented in the analysis. A greater proportion of managers and supervisors were interviewed than the workforce. The findings for this are combined with the follow-up study in the form of matrices to investigate attitudes towards safety and the management of safety to identify consistency of statements or mismatches between the various groups in the study (see chapter nine for details).

### *7.2.5.2 Interview Protocol*

Prior to conducting the interviews an article was published in 'Safety Matters' the organisation's bi-monthly magazine for safety which introduced me and gave a brief remit of my research purpose and my role in the organisation. At the start of each interview subjects were briefed on the purpose of the interview, and assured anonymity (i.e. that interview data could not be attributed to an identifiable individual), to avoid fear of reprisals, or subjects toeing the company line and giving answers they assume are required.

Interviews took place at the participant's work locations, either in their office, conference rooms or a quiet area. These interviews varied in length according to the individual interviewed and the time available. The interview was transcribed whilst the interviewer questioned the participant.

### 7.2.6 Examination of Cascade Briefing Process

The investigation of cascade briefs was two pronged. The first stage involves a content analysis of the briefing material to be passed through the cascade, whilst the second examines the success of the cascade briefing system in transmitting information through the hierarchy. The content analysis is purely descriptive. They reveal what the content and structure are but not why they are what they are; nor does the analysis reveal the impact of communication on the audience. Hence the cascade briefs were also examined through observation and interviews.

#### *7.2.6.1 Content Analysis of Briefing Materials*

The technique of content analysis was used to analyse the materials distributed in the team briefings. Sommer and Sommer (1991) define content analysis as

> "a technique for systematically describing the form and content of written or spoken material.... the basis of a content analysis is quantification (i.e., expressing data in numbers). Instead of impressions about trends and biases, the investigator comes up with precise figures."

A content analysis can focus either on structure or content. Content refers to the specific topics or themes; whilst structure includes location on the page, format, use of illustrations and so on. In this content analysis both structural and content will be considered, hence does safety receive more emphasis than business, and are there objective differences between the two topics in the brief.

The source material for the content analysis was four briefing packs, every other pack from the 'Briefing Matters' from completion of Study One through to its follow-up in Study Two were selected. To analyse these packs they were first skim-read to identify major themes, when the categories begin to repeat it was assumed the list was complete. Categories were then rationalised to avoid repetition or overlaps. A table of the brief was developed which listed the usage of various words in the brief, including passenger and customer, we, our and your, safety, and finance.

Word usage was calculated from the briefing packs using a concordance package which locates and counts the number of words within documents. The content analysis of briefing pack is displayed and elaborated in Chapter Eight (section 8.2).

#### 7.2.6.2 *Cascade Briefing in Practice*

A pro-forma was developed (see Appendix E) which identified key points from the formal briefing pack, and allowed comments, questions, and the overall perceptions of the meeting to be observed. The pro-forma was based on the Briefing Matters which was being transmitted through the cascade at that period. The researcher was invited to attend these team briefings following attendance at the functional manager's briefing to their teams, where a brief introduction and summary of the research project was given. The research was summarised thus, "I have heard how the cascade works on paper and want to observe how it works in practice". A business card was handed out, as well as an internal telephone number for people to use to contact the researcher to invite her to the briefs. The response rate for this was approximately 40%. However at the next level down the researcher followed every lead, having the backing of the manager at that level. Following attendance at the briefs, follow-up interviews were conducted with the briefer and the audience to gather their perceptions of the process. These questions were open ended and the focus was on perceptions of the briefing process, its content and the degree of success within the organisation. The results from this stage are presented in Section 8.3 of Chapter Eight: in the form of a table showing the wide variation in the way briefing process, and on attributions of briefing efficacy.

Interviews were conducted with both the briefer and the audience following attendance at the brief. Arrangements to conduct these follow-up interviews were made following attendance at the briefs. An open ended question set was used to gather perceptions on the communication process, including opinion of briefer, and of the cascade process. This question set is displayed in Appendix F.

### 7.2.7 Study Two

The question set from Study One was modified for reapplication to participants in this stage (see Appendix D). Modification was based on examination of responses from the previous interviews where productive questions and questions where it was speculated responses might have changed, were retained. A final multiple choice section was added using questions extracted from a previous study conducted with British Rail to evaluate the changes within the organisation (questions selected from the previous study were those considered relevant to the research question i.e. under topic headings safety, communications and management). The survey was conducted in the

autumn of 1992 study, three years before this research, had a large sample size and had ensured that the questions were valid and unambiguous. Unfortunately greater methodological detail was unavailable about this questionnaire, and in the current study was verbally administered rather than on paper which could affect response patterns.

Participants were selected on the basis of being involved in the first study, or individuals who occupied the role of the participant from Study One. Participants were informed that the purpose of the interview was to evaluate change within the organisation. There was no way to avoid this source of bias within the research.

## 7.3 QUALITATIVE DATA ANALYSIS

The data collected in this research project during Study One and Study Two was qualitative in nature. The bulk of the material was based on interview transcriptions. Some quantitative data was collected in the form of attitude survey data in Study Two. The various stages of the analysis performed on the data is elaborated in this section.

### 7.3.1 Data Reduction

This process was the first stage in performing the qualitative data analysis and is the process of selecting, focusing, simplifying, abstracting and transforming the data that appear in written-up field notes and transcriptions. This therefore basically involved the writing up of the interview data, and for the attitude survey component of Study Two entering the data into a spreadsheet.

### 7.3.2 Data Display

This was an organised, compressed assembly of information that permits conclusion drawing and action. As Miles and Huberman (1994) state the intent is to help us understand what is happening and to do something on the basis of that understanding. They advocate the use of matrices, graphs, charts and networks to achieve this.

For the attitude survey the data display involved developing response scores and displaying a summary on results tables. Two forms of analysis was performed on the data, the first was to look for intra-organisational differences (between functions and between groups), whilst the second was to look for differences between the current study and the study performed three years ago for British Rail. The first analyses used the unrelated t-test to compare the amount of variability in scores due to the predicted

differences in scores between the two groups as against the total variability in both groups scores. This t-test was performed on the data to look for differences between the responses of management compared to the workforce, and between the production and commercial functions. These tables are displayed in chapter nine, section 9.1.

A chi-square test was appropriate to compare the attitude findings from the previous study to those attained in Study Two, as the complete data from the first study was unavailable (i.e. the data was categorical). The data was categorised according to the percentage of participants that agreed or disagreed with each statement. A summary table of the chi test tables results are shown in section 9.1 in chapter nine, along with an explanation of the implications of the result.

For the Organisational Culture topic investigated in Studies One and Two a display was required which in Bernard's terms (1988) "makes complicated things understandable by reducing them to their component parts", and for the display to tell the story. A matrix format was selected which would be conceptually clustered (i.e. to bring items together that belong together) and would compare responses between constituent groups and the two research periods. The aim was to develop matrices that "compress and order data to permit drawing coherent conclusions, while guarding against the overload and potential for bias that appears when we try to analyse extended, unreduced text" (Miles and Huberman, 1994).

The matrices were developed using a concordance package. Concordance is the name used for an index of words used in a passage of text. The interview data was transformed into text-only files on the computer. These were then analysed using Conc 1.71 a freeware package used for developing concordances. The programme developed concordances according to criteria which the analyst can choose. The first stage in developing the matrices involved selecting 10 interviews at random from Studies One and Two and develop full concordances of all the text. The output from the programme was a list of all words in the text in alphabetical order with word frequency and location in the text (i.e. to provide context). The different concordances were compared and a list of topics and underlying sub categories developed. The topics chosen were incidents, safety, management, Compliance & Standards, and communication. Associated words for these topics were for the example of 'Communication': briefing, briefings, brief, bureaucracy, cascaded, cascades, chat, communicate, communications, grapevine, communication, information, informed, instructions, meeting, meetings, messages and rumours. These words were entered into the concordance programme, which would then develop the concordance based solely on these words. All coding of the interviews was done blind in that when the

concordances were developed the identity of the participant was unknown. The concordance output could display the selected words in context and these were printed out for each participant in both studies. The text was then further condensed into subcategories; for communication this involved dividing the topic into: Quality of Communication, Topics of communication, Problems with the communication process, reasons for efficacy and overall opinions. This process continued until matrices summarising the interview findings had been developed. The intent within each cell of the matrix was to show a summary of the consensus of each group, and to provide a quote illustrating this (see Appendix G for this procedure). This then provides the basis for comparison and conclusion drawing.

### *7.3.3 Conclusion Drawing and Verification*

Conclusion drawing and verification involves deciding what the results actually mean. Within the current research a mixed methodology was used to allow for triangulation of the data and to allow a well developed and argued case. Triangulation was a phrase first coined by Webb et al (1966) where they spoke of validating a finding by subjecting it to an "onslaught of a series of imperfect measures". It basically matches the modus operandi of detectives, mechanics and GPs, which is the idea of collecting sufficient evidence to point to the same conclusion.

In this research the conclusion drawing and verification of the research will be detailed in the discussion chapters where the implications of the research will be discussed in terms of the organisation and implications for academic literature.

## 7.4 CONCLUSIONS

This methodology section has covered the research process, its justifications and the problems encountered. The next section elaborates the research findings in chapters eight and nine, with these being discussed in chapter ten, eleven and twelve.

# CHAPTER EIGHT

## *Results*

There are two chapters detailing the results of this research. The first chapter details the results of management's strategies and their effectiveness, whilst the second chapter integrates the research findings into a coherent picture of the organisational culture and the process of change. The implications of these findings organisationally and the wider academic view are elaborated in the discussion chapters of this thesis.

The research findings are detailed in chapters eight and nine as shown below:

- Management's perceptions of the organisation Ch. 8
- Cascade briefs - content analysis Ch. 8
- Cascade briefs - how they worked in practice Ch. 8
- Attitudinal findings: compared to four years ago and intra-organisational Ch. 9
- Matrices - summary of interview findings Ch. 9

In summary these results chapters endeavour to show the problems that management identified and the steps they took to resolve them, and then with the attitude survey and interview findings display how and why these strategies were unsuccessful.

## 8.1 MANAGEMENT'S PERCEPTIONS

This section is based on the familiarisation stage of the research and details the interview findings from executive management in the organisation, and their strategies for remedying the identified problems. This stage therefore identifies what management thought were the problems with the organisation, and the way they attempted to resolve these. A final column is added to the table which attempts to link back the success of their solutions to these organisational difficulties. The table has four columns and the information is derived from interviews with the Managing Director, the Functional Heads and Higher Management. The column headers are: Dysfunctional Characteristics, Causes, Organisational Strategies and Research Findings. Dysfunctional Characteristics refers to weaknesses identified by the sample with

regards to the organisation. Causes are the causal factors attributed by executive management for the dysfunctional characteristics, causes were not attributed to all the dysfunctional characteristics. Organisational strategies are solutions being implemented to resolve the difficulties, and research findings is a summary of findings from this research relating to these.

| Dysfunctional Characteristics | Causes | Organisational Strategies | Research findings |
|---|---|---|---|
| Duplicate systems | In the past independent responsibilities for safety | Development of Compliance & Standards function | Duplicate systems eliminated but new systems not liked (see Ch. 9, 9.2.1.3) |
| Auditing systems not effective | Cultural barriers to being audited | Communication of underlying purpose of audits | No change - purpose of audits not communicated (9.2.1.3) |
| Accidents not reduced | | Dedicated safety plan - communicating & monitoring | No change - not operational reality (9.2.1.5) |
| Poor at disseminating information at any level | | Appointment of Communications Manager, development of briefing cascade | No change (see 8.2) |
| Briefs fail | Culture of non-attendance, Hidden 18, and not viewed as helpful | Safety only, 2 -way information flow, less than one hour, briefer trained | Strategy not operational (see 8.2) |
| Meetings are tactical and actions not resolved | Functional managers do not take responsibility | Strategic meetings, simple instructions | Don't Know |
| Unreceptive audience | scepticism, lack of understanding of business and new structure | Revise communication strategy | Strategy not effective (8.2) & opinions (9.2.5) |
| Workforce culture of do minimum | Poor pay, unsociable hours, unions | | Lack of commitment to mission/privatisation |
| Management-workforce gap | Management seen as incompetent, role of unions & politics | Increase visibility and profile of managers | Strategy not implemented. |
| Blockage to change | Supervisors fail to communicate or involve due to threat to jobs. | | Communication - see 8.2 & 9.2.5. |
| Lack of understanding of C&S | Staff cynical and feel C&S create work rather than solve problems | | C&S not well viewed, see 9.2.3 |

*Table Four: Management Perceptions of Organisational Failings*

As can be seen from a study of Table Four, management were on the whole aware of the problems their organisation faced. Of those identified, many relate to the poor workforce-management relations, while few relate to specific safety management problems. This is consistent with management viewing business as of primary importance as distinct from safety. However changing the safety culture of the

organisation was proposed as the primary purpose of the brief and of my research, management do not see this as of particular importance. This highlights the differences between what is prescribed by management as of importance, and what is actually perceived as a problem.

The research findings column highlights the ineffectiveness of the organisational strategies, it is possible however that continuing change and organisational pressure resulted in the strategies not being implemented effectively, and workforce attitudes acting as barriers to change.

## 8.2 CONTENT ANALYSIS OF CASCADE BRIEFS

A content analysis of four briefing packs is made over a period from July 1995 to March 1996, which covers the packs distributed between Study One and Study Two. This section reviews the briefing packs distributed, including topics and the focus of the articles and a traditional content analysis looking at frequencies of word usage and the use of certain words by the different components of the brief.

### 8.2.1 Review of Content of Briefing Packs

This section reviews the topics covered in the cascade briefs and the dates when distributed through the hierarchy, and notes items of interest. It highlights how the briefing pack evolved and changed over an eight month period, and how safety is marginal to the overall intent and content.

#### *8.2.1.1 Briefing Matters Number 8*

This was distributed in the middle of August 1995 and covered the following topics.

Safety was covered using piecharts and tables of staff accidents to display the information. The aim of it is to explain the different ways that safety statistics are recorded within the organisation, covering both staff and passenger accidents. What was presented was a series of tables which covered the whole organisation, and consisted primarily of figures.

Business topics covered the financial position of the company, and was threatening in content e.g. Income was £1.5 million lower, and the cost of running company was £400,000 higher. Only 20% of costs are controllable (e.g. paybills and supplies). The brief used 'management speak' in terms of 'we will do this', suggesting that the organisation worked as a team, and implied a relationship which did not exist. The

theme of the brief was then violated by a statement stating that "We will introduce focused marketing campaigns" which illustrates the use of management being 'we' as opposed to the organisation. The intent of the brief was to be honest with the workforce and to gain their commitment to the organisation.

The third topic in this brief was informative and was intended to bring the workforce up-to-date with changes to the infrastructure. This change was directly relevant to those staff on the lines. The brief gave quite detailed information on the changes to the track and lines, and the resultant changes in service.

### *8.2.1.2 Briefing Matters number 10*

This brief was distributed to staff in the middle of October, 1995. The format had been modified slightly, and included a sheet which gave the organisation good news and was titled 'Moving Forward' - it detailed various changes to the organisation, including the new commercial manager, the awarding of an ISO9001 certificate and approval of the Safety Case. The sheet detailing this good news ended with a "To be continued...". It was repeated the next month, and then discontinued.

This *Briefing Matters* covered three business issues and one safety issue. The business issues were: Train Lines Modernisation; Changes to the company, and Ticket Revenue; whilst the safety topic was the Safety Case. The topic on the Train Lines modernisation was basically an update on the progress of the work and the dates when the work would affect the service on these lines.

The next topic covered the changes of British Rail as they impact upon the Train Operating Company. The article covered the effect of these changes upon employees and the "role they can play in the future success of the company". This brief reiterates points made in *Briefing Matters* number 8 about the finances of the organisation, and about 80% of the costs being fixed, and further threats "If we don't meet our budget we must look for savings and these can only be found within this 20%, or alternatively, we must grow the business. If we all pull together we can be successful" (emphasis in original). This was supplemented with what 'each and every one of us' can do to increase revenue by attracting and keeping existing customers. The recommendations include: always put the customer first; be smart on duty; carry out your duties safely and professionally; and cooperate with our colleagues in other departments and companies. The authors follow this list with a further threat, "if we choose not to follow these points then the customer will go elsewhere - and make no mistake they will."

The Safety Case was the safety topic for this pack. In seven slides the content of the safety case was described. The purpose of the safety case was described, as well as the status of the document with regards to permission to operate. The main areas covered within the Safety Case were listed, as were the different mechanisms used for checking it. The topic ends with a slide asking "Who is responsible for implementing our Railway Safety Case ? WE ALL ARE !".

### *8.2.1.3 Briefing Matters Number 12*

This pack was distributed in the middle of December 1995, for cascading down through the hierarchy before the middle of January, 1996. In this pack there was one business issue and one safety issue. The business issue continued the theme of getting workforce involvement in the process of change, the aim was stated as "to give an overview of the steps being taken to both retain current customers and attract new ones". The safety topic was informing staff about the process and topics covered in an International Safety Rating System (ISRS) audit.

The business topic reiterated further the downturn in the business and talked about the loss of season ticket holders, and each individual's responsibility to keep and attract new customers. The brief then went on to describe the initiatives in place within the company, these were mainly at management level and included advertising booking office opening hours, management support for staff during disruption, and cleaner trains. These were cited as positive steps to ensure the business base was strong and continued to grow. The topic closed with a veiled threat, "We must all work towards the same goal, no matter how difficult things may be. We are moving very quickly towards privatisation so if we do not please the customer then it is certain that somebody else will do it for us."

The safety component of the brief outlined the International Safety Rating System, and the level required by the company, and the commitment to this from managers and staff: "By working safely to the systems and procedures in place and by identifying and correcting unsafe acts and conditions we can look forward to achieving these targets". The brief covered two out of the eight elements which would be assessed, these were Emergency Preparedness and Planned General Inspections. The brief outlined the types of questions that the workforce could be asked and the types of things of which they should be aware. The brief did not provide information on these topics rather it gave people questions to think about.

### *8.2.1.4 Briefing Matters number 14*

This brief was the shortest of all the briefs examined and was distributed from the middle of February to mid March. The topics covered were an update of work on the London Orbital route, and an overview of steps being taken to increase the ticket income for the company. The safety topic concerned Manual Handling, and guidance on how to lift and move loads.

The Business topic started thus: "the company has a vision for this route, a vision it is working hard to achieve. Our aim is, ultimately to provide a service our customers want." The topics covered in the brief relate to the various infrastructure changes, as well as the rebuilding of a number of stations. The focus therefore is positive, explaining the benefits of the revised system to customers, and the closing remark being "we will invest in this line. It will address rolling stock problems and staffing problems. There is a strong market for our services, together we must make that market ours."

The next topic referred to increasing ticket revenue. It started by defining a customer, and how everybody is a customer of some sort, and what customers want. It continued that it costs nothing but hard work to keep a customer. This theme continued with the role of staff when dealing with customers including "display the correct attitude - courtesy and helpfulness cost nothing", "the customer always comes first", and "we have the ability to provide customers with excellent levels of customer care at all times." The pack then went on to elaborate the role of marketing and revenue protection inspectors on attracting and maintaining customers.

The topic on safety relates to the hazards involved in manual materials handling and highlighted different control and avoidance strategies. The brief mainly acted as a method to inform staff correct lifting techniques including, carrying and pushing things in the workplace.

## 8.2.2 Content Analysis of Briefing Matters

A content analysis was performed on a selection of material passed down through the cascade briefing system. Table Five provides a summary of the content analysis on the briefing packs. The criteria selected were number of words on the script, number of words on the slide, the number of times the following words were used in either the slide or the script (the first number refers to word occurrence on the script, whilst the bracketed number refers to the slide): passenger, customer, we, our, responsibility, all, finance, revenue, you, your and safety. A topical question was added relating to the issue of factual (to distinguish between propaganda type) issues.

| | ONE (8) | | TWO (10) | | THREE (12) | | FOUR (14) | |
|---|---|---|---|---|---|---|---|---|
| Criteria | Business | Safety | Business | Safety | Business | Safety | Business | Safety |
| Words(script) | 1400 | 448 | 739 | 693 | 283 | 435 | 1180 | 521 |
| Words(slide) | 278 | 3 tables | 208 | 179 | 99 | 161 | 231 | 76 |
| passenger | 0 (0) | 5 (2) | 0 (0) | 0 (0) | 0 (0) | 1 (1) | 0 (0) | 0 (0) |
| customer | 6 (2) | 0 (0) | 3 (0) | 0 (0) | 3 (5) | 0 (0) | 33 (11) | 0 (0) |
| we | 29 (9) | 0 (0) | 6 (7) | 2 (0) | 4 (2) | 2 (3) | 7 (4) | 0 (0) |
| our | 9 (1) | 0 (0) | 5 (3) | 0 (0) | 3 (1) | 0 (0) | 3 (0) | 0 (0) |
| you/your | 1 (0) | 0 (0) | 1 (0) | 0 (0) | 1 (0) | 7 (1) | 0 (0) | 3 (0) |
| responsibility | 2 (1) | 0 (0) | 0 (0) | 6 (1) | 3 (0) | 1 (1) | 0 (0) | 2 (1) |
| all | 1 (1) | 0 (0) | 2 (0) | 5 (1) | 5 (2) | 0 (1) | 2 (0) | 0 (0) |
| finance | 4 (2) | 0 (0) | 0 (0) | 0 (0) | 1 (1) | 0 (0) | 0 (0) | 0 (0) |
| revenue | 4 (0) | 0 (0) | 0 (0) | 0 (0) | 1 (0) | 0 (0) | 4 (1) | 0 (0) |
| safety | 0 (0) | 1 (0) | 2 (1) | 11 (4) | 0 (0) | 4 (2) | 4 (4) | 0 (0) |
| factual | 4 (4) | 5 (3) | 2 (3) | 3 (6) | 2 (0) | 2 (2) | 4 (3) | 5 (4) |

*Table Five: Content Analysis of Briefing Matters*

There are a number of points to be noted on this table.

- There is also a reduction in the use of the word 'we'. In the first pack 'we' was used 29 times in the business part of the brief;
- The word customer was only used in the business part of the brief, and the word passenger used only in the safety component. This in part is due to the accident reporting system which collects data on passenger incidents;
- Safety was used predominantly in the safety component, whilst finance and revenue were used solely in the brief components, overall though the word 'safety' was not much used;
- Each brief takes the same format with four slides per topic;
- It was rare for graphics to be used in the business part of the brief.

## 8.3 OBSERVATION OF CASCADE BRIEFS

This section elaborates the findings from observing the cascade briefing process. The findings will be displayed in two ways, the first will show a summary of the briefing process in practice looking at the topics covered in the brief, questions asked, the

length of time devoted to each topic, and the extent to which the briefer 'stuck to the script'. The second way of examining the effectiveness of these cascade briefs was by follow-up interviews with both the briefer and the audience to gauge perceptions at this level regarding the success of the brief.

### 8.3.1 Objective Measures of Cascade Briefing Efficacy

Table six shows the results from observations of the cascade brief. All briefs were observed during the same briefing period, the purpose being to evaluate the efficacy of the same message and modifications undergone to the message in the process. However half the briefs observed were not using the same *Briefing Matters* and the briefing period in different parts of the organisation varied from the four weekly required through to five week intervals up to eight week intervals. Consequently the cascade process is not synchronised within the organisation, with three briefs in operation at any one time. Briefing Level refers to the level at which the brief was occurred. C0 - refers to the commercial manager briefing senior managers, C1 is senior managers briefing their team, and C2 is the next level down with a team leader or supervisor briefing their team. On the Production side P0 is the production manager briefing senior managers, P1 is senior managers briefing their team, and P2 is the staff being briefed. Length of brief refers to the length of the brief; percent of total is a calculation of the contribution of the briefing pack to the total brief in terms of time; percent safety refers to the percentage time devoted to safety, compared to the rest of the brief; Number (no.) of questions gauges the degree of interest shown in the brief and the number of questions asked by the audience; a further measure of question interest was gauged in terms of a subjective assessment of audience interest, in terms of attitude during the meeting; whilst number of slides used, adherence to script and using the slides were further measures of compliance to organisational policy.

| Briefing Level | Length of time | % total brief | Percent safety | N° questions | Interest (h ->l) | N° Slides | Script | N° people |
|---|---|---|---|---|---|---|---|---|
| C0 | 65 mins | 10% | 35% | 1 | medium | 3 | Y | 12 |
| C1 | 100 mins | 21% | 50% | 0 | low | 10 | N | 10 |
| C1 | 180 mins | 20% | 15% | 0 | high | 9 | N | 6 |
| C2 | 60 mins | 25% | 40% | 0 | low | 9 | N | 13 |
| C2 | 45 mins | 50% | 50% | 2 | medium | 6 | N | 6 |
| C2 | 50 mins | 0% | 20% | 0 | low | 0 | N | 2 |
| C2 | 10 mins | 80% | 30% | 0 | low | 12 | N | 2 |
| P0 | 160 mins | 0% | 25% | 0 | medium | 0 | N | 7 |
| P1 | 180 mins | 15% | 30% | 6 | high | 13 | N | 9 |
| P2 | 30 mins | 50% | 50% | 2 | high | 8 | N | 2 |
| P2 | 70 mins | 0 % | 60% | 0 | medium | 0 | N | 7 |

*Table Six: Table of Observations from Brief*

As can be seen from the table there is a wide variation in the way that the cascade briefs are conducted in the organisation, ranging from complete compliance with the system through to non-compliance. Overall it appeared as though the cascade system did not interest the audience and that there was little consultation and participation in the process. The next section summarises the interview findings and highlights characteristics necessary for communications to succeed within the organisation.

## 8.3.2 Subjective interpretations of the Cascade Brief

The points raised in this section relate to comments made in the briefing sessions or to interviews carried out with briefer and audience members following the briefs. It also includes observations made during the briefing process which facilitated the effectiveness of the brief. These points are categorised according to the stage in the briefing process. The summary starts with the brief formulation, the message, the briefer, the audience and resultant action.

### 8.3.2.1 Design of the Brief

The cascade briefing system is organisational policy, and the underlying philosophy was to overcome the rumour-driven nature of the railways by transmitting a consistent and regular message through the cascade mechanism (as stated earlier in this chapter). The brief is put together by an editorial panel, consisting wholly of management based in the company's headquarters, who decide on the content of the brief and then delegate the task of compiling the brief to the relevant function. The meeting is poorly attended with no operational member of staff sitting on the panel. Consequently the workforce have no role in developing the briefs and it is not targeted to their needs.

Comments about the meeting about the design of the brief include:

> "nobody gives a damn, laissez-faire about attendance and there's no commitment to the meeting"

Generally feedback pathways concerning the content and quality of briefing information were not used, hence briefs continue to fail to meet organisational needs. There is a failure within the organisation to acknowledge the two-way nature of briefs, which is reflected in the editorial panel composition.

### 8.3.2.2 The Message

The cascade briefing system involves the transmission of a number of consistent messages through the organisation. Consequently the information is not targeted to the different organisational audiences, ranging from office staff, retailers, train drivers,

guards and depot workers, and is not adapted to the different organisational and political contexts, or their organisational culture. This results in the message tending towards specific maxims, especially concerning safety messages, which are hard to operationalise and put in place. There is also a tendency for the organisation to transmit information intended to achieve organisational commitment, which overlooks the cynical and pessimistic nature of the workforce within the railways.

Comments on the content of the brief (i.e. the message) include:

> "Briefing pack - too much mush. Need more bullets and less meaningless statistics. They think "bulk means better" but its not the case. The more paperwork the less effect you have"

> "Basically they're interested in what effects them, so needlestick injury item is right down their line, its far better when its tailored, however it is down to time again, its easier to photocopy the lot than to take time to read it and make it suitable"

> "Information in the packs is getting better, a lot of the stuff is 'nice to know 'rather than 'need to know'"

Higher management are the author of the messages being transmitted through the briefing system. Due to a failure in organisational feedback mechanisms the message is poorly targeted. Further, as management are acknowledged as the source of the message it is portrayed as propaganda. This results in the message being disregarded by the audience, as it is one-sided and the source not credible. Higher management also fear transmitting bad news to the workforce within the organisation and therefore when information is transmitted in the organisation there is a focus on good news and presentation of only one side of an argument.

#### 8.3.2.3 The Briefer

Due to the nature of the cascade briefing process, the individual briefing the message varies from being managerial to supervisorial. The quality of the brief transferred to the audience varied throughout the organisation. The further down the hierarchy the briefer the more negative the briefings tended to be, in terms of questions asked, the time devoted to the brief, the attentiveness of the audience and the types of comments made during the brief. It is proposed that this relates to managerial distance and that further down the cascade briefer's allegiance is with the audience rather than with management. This resulted in briefs being conducted cynically and without thought, and transmitting the information as management propaganda .

> "That's managements bit done"

> "Had this off Nigel this morning, so its straight from the horse's mouth"

The briefer all fail to give feedback up the hierarchy about the quality of the message and of items raised at the briefs. This results in the cascade transmitting information down the hierarchy only. Interviews conducted with briefer revealed that giving feedback on the brief had not been considered, and that they did not participate in the process. This highlights the attitudes concerning the briefing process within the organisation as solely a management requirement which fails to serve any other requirement in the organisation. Some meetings solely focused on the mechanics of carrying out a brief, and ensuring individuals sign in and signed appropriate things. A number of briefer recognised the importance of passing good news on to teams and explained items of good news for transmission through the cascade.

#### 8.3.2.4 The Audience

The audience do not fully trust the management of the organisation. This is a result of various uninformed changes within the organisation (a number of which are covered in chapter six), and an unwillingness by management to transmit bad news means the workforce believe that management withhold information. Furthermore the audience do not believe the management of the organisation (or message source) have sufficient operational experience to brief staff. This was compounded with regards to safety information as the source was deemed unqualified to comment on operational safety issues. The message source was viewed, by the audience, as functional managers, rather than a panel and discredited the brief further.

#### 8.3.2.5 Action

The audience tended to be cynical and distrustful of the information briefed to them. This means that the intent of the team briefing process is violated. The organisation is still rumour driven and the widespread logistical problems of briefing to a geographically diverse workforce continue. The entire briefing process fails due to barriers to successful communications at each stage of the process.

### 8.3.3 Summary of Cascade Process

Overall the cascade process is not fully effective within the organisation. However some commendable practices have been identified:

- arranging cover to ensure all staff receive a team briefing (as opposed to one-to-one briefs) in one area;
- manager emphasising the importance of briefings and explaining how to pass on the information to staff;

- team briefings do occur throughout the organisation;
- successful briefs occurred where management commitment was made explicit, e.g. the briefer emphasised certain aspects of "Briefing Matters" and supplemented the brief, making it obvious that they had been briefed e.g. "I've had this straight from the horse's mouth";
- where the safety content of "Briefing Matters" was deemed insufficient for a brief it was supplemented by issues relating to the rulebook, incident reporting and a discussion of appropriate reactions to unusual situations.

Areas for improvement include:

- the poor implementation of the briefing cascade - three packs were being briefed in a period when only one was current;
- briefings tend to be predominantly one way, with the cascade being used to transmit information down the cascade and not used for consultation and participation, or resolution of issues;
- many individuals complain about the brief's content. However no one feeds this back to the editorial panel is given;
- some briefer were expected to carry out team briefings without having received a brief themselves, this was common practice in some parts of the organisation, as opposed to contingencies as a one-off due to illness;
- the safety content of the brief was too general, and required supplementing by the briefer. When safety information was supplemented the brief was more successful, however the majority of briefer did not do this;
- there was a poor opinion of management and the underlying purpose of the brief which resulted in indifference to the message, and a failure to give feedback.

## 8.4 SUMMARY OF FINDINGS

This chapter has detailed some of the research findings. The chapter has focused mainly on what management identified as the main problems and the steps taken to

rectify these. The steps taken included the development of an organisation-wide cascade briefing system. The cascade briefing system was examined in terms of the messages transmitted through the cascade, as well as the effectiveness of the actual briefing process. Overall the cascade process is not fully effective in the organisation, and fails at a number of stages in the briefing process, from the formulation of the message to its transmission. The next chapter covers organisational culture and attitudes of the communication and managerial strategies of management. The interview data, in the form of matrices, is categorised into main topics and broken down according to function and managerial grade and compares Studies One and Two. It also identifies changes in attitudes over a three year period from a previous survey.

# CHAPTER NINE

## *Interview Findings*

There are no facts, only interpretations

Friedriche Nietzsche

This chapter complements the previous chapter which detailed the results of management strategies and their success, specifically concerning the topic of cascade briefings. It covers the findings from an attitude survey as well as interview findings. The findings from the semi-structured interviews in the present chapter are displayed in the form of matrices to highlight the intra-organisational differences and highlight any changes that have occurred over the eight month period.

## 9.1 FINDINGS FROM ATTITUDE SURVEY

This section displays the main findings from an attitude questionnaire conducted concurrently with semi-structured interviews at the end of Study Two. Two types of analysis are displayed in this section. The first looks at intra-organisational differences between the various functions and management. Whilst the second is a comparison between the responses made during the current research project with an attitude survey conducted in 1992.

### 9.1.1 Intra-organisational Attitude Results

The responses from attitude statements were compared within the group to look for intra-organisational differences. Table seven displays the results of two t-tests performed on the data to investigate whether there were statistically significant differences between the production function (P) and the commercial function (C), and between management (M) and workforce (W). The significant differences are highlighted in **Bold** and *.

| QUESTION | t-value (P vs C) | t-value (M vs W) |
|---|---|---|
| Management make fair decisions | 0.091 | 0.817 |
| Management do not understand my problems | 0.498 | 0.390 |
| Management have a clear sense of direction | 0.787 | 0.587 |
| Management style does not encourage us to give our best | 0.940 | 0.124 |
| I don't believe what I am told by senior management | 0.834 | 1.446 |
| Management are overstaffed | 1.093 | **2.403 *** |
| Management have good man-management skills | 0.110 | 0.278 |
| Management are honest and state their intentions | 0.976 | 0.923 |
| Rumours | 0.118 | 0.482 |
| Official communication are poor | 0.192 | 0.311 |
| Management consult the workforce about all issues | 0.086 | 0.191 |
| Briefs include information we need to know | 0.017 | 1.189 |
| The purpose of the SMS is to protect the workforce | 0.616 | 1.408 |
| SMS are bureaucratic | 0.952 | 1.756 |
| SMS hinder safe performance | **2.274 *** | **2.270 *** |
| Incident reports are a good idea as action always results | 1.576 | **2.374 *** |
| Incident reports are time-consuming | 0.645 | 0.294 |
| Railtrack are very slow to resolve things | 0.619 | 1.463 |
| Overall safety is very good here | 0.519 | 0.575 |
| Staff safety is less important than passenger safety | 1.026 | 1.212 |
| Complaints about safety are dealt with swiftly | 0.612 | 0.876 |
| Cutting corners is acceptable under some circumstances | 0.231 | 1.231 |
| Worried for personal safety from equipment | 0.770 | 1.237 |
| Worried for personal safety from physical attack | 1.425 | 1.726 |
| I am happy with safety rules | 0.652 | 0.897 |
| I am happy with fire regulations | 0.253 | 1.050 |
| I am happy with emergency procedures | 0.442 | 1.897 |
| Safety of passengers is paramount | 0.173 | 0.383 |
| Cutting corners is fine as long as you're not caught | 1.798 | 1.207 |
| Instead of focusing on safety do train service | **2.998 *** | 1.470 |
| Morale is generally high | 0.201 | 0.922 |
| I am seriously considering leaving NLR | 1.173 | 0.690 |
| Communications | 0.673 | 0.089 |
| Safety | 1.832 | 0.681 |
| Morale | 1.147 | 0.622 |
| Management Behaviour | 0.791 | 0.140 |
| Working conditions | 0.751 | 1.716 |
| NLR on the whole | 0.305 | 0.578 |

*Table Seven: Intra-organisational Results*

There are two significant differences between the Commercial function and the Production function. These relate to the 'Safety Management Systems hinder safe performance', and 'Instead of focusing on safety they should focus on the train service'. Overall there is no significant difference between the management's groups responses

and the workforce's with the exception of those questions in bold. Significant differences were noted for 'Management are overstaffed', 'Safety Management Systems hinder safe performance', and 'Incident reports are a good idea as action always results'. The difference goes the way expected with management not believing they are overstaffed, not agreeing that Safety Management Systems hinder safe performance, and that incident reports are a good idea as actions always result.

### 9.1.2 Attitude Change

The following table is a summary of the research findings where the results from the attitude survey are displayed. A summary table compares responses to statements attained now and compared to four years ago using Chi-square tests. The Null Hypothesis for this test is that there is no difference between now and then in the way that participants respond. Each table has six columns:

- Question: refers to the question asked;
- Time: refers to when the question was answered. *Now* refers to responses gathered in the Winter of 95/96; whilst *then* refers to the third quarter of 1992 (i.e. just over three years previously);
- Agree: percentage of respondents who agreed with the statement;
- Disagree: percentage of respondents who disagreed with the statement;
- Chi-value is the value of Chi calculated, those in bold type were significant at the 0.05 level;
- Comment is the column which elaborates points of note within the table.

| Question | TIME | AGREE | DISAGREE | Chi value | COMMENTS |
|---|---|---|---|---|---|
| **Management** | | | | | |
| Management make fair decisions | NOW | 48 | 28 | **5.5529** | Direction of difference suggests management are viewed as |
| | THEN | 34 | 43 | | making fairer decisions now than they were 3 years ago. |
| Management do not understand my problems | NOW | 36 | 48 | **4.4691** | Management are viewed more positively than in the past. |
| | THEN | 53 | 37 | | |
| Management have a clear sense of direction | NOW | 36 | 40 | 3.4312 | Management both now and 3 years ago were perceived as |
| | THEN | 27 | 55 | | not having a clear sense of direction. |
| Management style does not encourage | NOW | 56 | 36 | 0.9393 | Most of those questioned believe that management style |
| us to give our best | THEN | 59 | 28 | | does not encourage them to give their best |
| **Communications** | | | | | |
| I don't believe what I am told by | NOW | 40 | 44 | 0.0064 | No clear pattern in the results |
| senior management | THEN | 41 | 44 | | |
| I usually hear of important matters | NOW | 80 | 12 | 0.0032 | No clear difference - a majority of respondents believe they |
| first through rumours | THEN | 82 | 12 | | usually hear about important matters first through rumour |
| Official communication are poor | NOW | 60 | 32 | 1.8521 | More people now believe that official communications are |
| | THEN | 40 | 33 | | poor, athough it is not significant. |
| **Safety** | | | | | |
| Overall safety is very good here | NOW | 88 | 8 | **60.098** | Perceptions of overall safety have improved significantly |
| | THEN | 33 | 60 | | compared to 3 years ago. |
| Complaints about safety are dealt with swiftly | NOW | 48 | 44 | 2.0920 | The results show no clear pattern of responses. |
| | THEN | 36 | 51 | | |
| I am frequently worried for my personal | NOW | 24 | 68 | 0.2749 | Most people now and then did not feel worried about their |
| safety from unsafe machinery, equipment | THEN | 20 | 68 | | personal safety from unsafe machinery. |
| I am frequently worried for my personal | NOW | 52 | 36 | **3.5146** | More people are concerned about physical attack now |
| safety at work from physical attack | THEN | 42 | 51 | | than 3 years ago |
| I am happy with safety rules | NOW | 84 | 16 | 0.0855 | There is no significant difference - people now and then |
| | THEN | 75 | 16 | | were satisfied with the safety rules |
| I am happy with fire regulations | NOW | 100 | 0 | **17.8651** | Everyone interviewed this time were satisfied with fire |
| | THEN | 76 | 15 | | regulations |

Table Eight - Attitude Change

| Question | TIME | AGREE | DISAGREE | Chi value | COMMENTS |
|---|---|---|---|---|---|
| I am happy with emergency procedures | NOW | 72 | 16 | 0.7171 | No change in the response patterns |
| | THEN | 69 | 21 | | |
| **Organisation** | | | | | |
| Morale is generally high | NOW | 20 | 80 | **13.2781** | There is a significant difference in the results. It appears |
| | THEN | 39 | 48 | | that people now suffer low morale more than before. |
| I am seriously considering leaving NLR | NOW | 8 | 76 | **4.5874** | Less people now, than then are considering leaving NLR |
| | THEN | 19 | 70 | | |
| **Change** | | | | | |
| Communications | NOW | 24 | 36 | **4.8237** | The significant result suggests that communication |
| | THEN | 10 | 39 | | has changed for the better (24%) |
| Safety | NOW | 52 | 20 | 0.7079 | No significant change. 52% now believe safety has |
| | THEN | 31 | 8 | | improved |
| Morale | NOW | 8 | 64 | 0.0301 | No significant difference; now and then the majority |
| | THEN | 6 | 53 | | believed morale had worsened. |
| Management Behaviour | NOW | 16 | 48 | 2.2850 | More people now and four years ago think that |
| | THEN | 17 | 27 | | management's behaviour has worsened. |
| Working conditions | NOW | 40 | 12 | **14.7892** | 40% of people now believe that working conditions have |
| | THEN | 13 | 23 | | improved |
| NLR on the whole | NOW | 32 | 44 | 0.9541 | There is no clear pattern in the results, although the |
| | THEN | 16 | 32 | | responses follow the same pattern. |

Table Eight - Attitude Change

Key findings from this component of the research are:

- Management are viewed more positively now compared to three years ago. This is evidenced from the two significant results on 'Management make fair decisions' and 'Management do not understand my problems'.

- Safety is also viewed more positively now than it was three years ago, with 88% of respondents believing that 'Overall Safety is very good here'. This is consistent with the positive and majority responses now on questions concerning unsafe equipment, safety rules, fire regulations and emergency procedures.

- However two safety related items which yielded statistically insignificant results concerned 'Complaints about safety are dealt with swiftly' which 48% of respondents disagreed with now; and 'I am frequently worried for my physical safety at work from physical attack' which had shown a significant increase in people agreeing with this statement compared to three years previously.

- Morale is also viewed as being low, 80% of participants now (compared to 48% three years ago) disagree with the statement that 'Morale is generally high'. This is consistent with the later statement about whether morale has changed since the introduction of Train Operating Companies (previous question set asked about since became British Rail), which found that 64% of respondents believed morale had worsened (Comparable to 53% three years ago).

- Significantly fewer participants are considering leaving the company than were considering leaving British Rail. The majority of people are not considering leaving the organisation. The cause of the difference may relate to the fact that previously people could move around British Rail whereas opportunities for this have vanished.

There were no significant differences between the following:

- Management are not viewed as having a clear sense of direction, this is consistent with the findings from the previous survey. The style of management is viewed as not getting the most out of the workforce (56% believe that it doesn't encourage them to give their best now, compared to 59% previously).

- Concerning information transmission, no significant result or majority was attained for 'I don't believe what I am told by senior management'.
- Management behaviour is seen as worsened since the change to individual companies, which is comparable with the change identified before.
- Working conditions are seen to have improved since the company came into existence, compared to neutral results attained three years ago.
- The company on the whole is perceived by 44% of participants as getting worse.

## 9.2 MATRICES

The findings from all the semi-structured interviews are displayed in this section. Matrices were constructed separating responses from management and the workforce, and between the two functions. A further division was made to compare responses between the two interview studies. The matrices form summaries of the main findings and are representative of the participant's responses. Five main categories were constructed, these are:

- Safety
- Incidents
- Compliance and Standards
- Management
- Communications

Each of these were broken down into sub-categories. These are displayed over the following pages, key points and change identified will be elaborated following each. Within the matrices text in italics refers to a direct and typical quotation from participants. The groups are broken down into the Commercial and Production, and Management and Workforce.

### 9.2.1 Safety

The first matrix shown is for safety, and this is subdivided into the following matrices: Safety Responsibilities; Quality of Safety; the Management of safety; Cutting corners; Accidents and Vulnerability

| SAFETY RESPONSIBILITIES | MANAGEMENT | | WORKFORCE | |
|---|---|---|---|---|
| | COMMERCIAL | PRODUCTION | COMMERCIAL | PRODUCTION |
| **STUDY ONE** | Safety standards, emergency plan, safe systems of working and identify shortfalls | Safe passage on trains, safety of drivers, rules and regulations | Safety of staff and customers on platforms and at stations.<br><br>*"safe running of a financial area"*<br><br>*"Put a stop to unsafe things"* | Safe and efficient running of trains for staff and customer. |
| **STUDY TWO** | Responsible for writing out safe systems, men, stations, conditions of platform, customers<br><br>*"Responsible for everything"* | Safe and reliable railway - make sure they drive safely, adhere to rules and regulations when staff carry out duties | Safe running of trains, fully staffed, fit for duty, safety responsibility to passengers and to staff<br><br>*"to present them sober and fully dressed"* | Safe and efficient working of trains. |

***Table Nine: Safety Responsibilities Matrix***

### *9.2.1.1 Safety Responsibility*

Table nine displays the topic of safety responsibilities. This is about individual responsibilities towards safety.

Everyone at both the Study One and Two were aware of their safety responsibilities. For the production function these related to the safe passage of trains - whilst the commercial function were concerned with customers and stations. Management also recognise the importance of pro-actively managing safety, which is shown by their awareness of systems and the concept of control over the workforce.

| SAFETY | MANAGEMENT | | WORKFORCE | |
|---|---|---|---|---|
| QUALITY OF SAFETY | COMMERCIAL | PRODUCTION | COMMERCIAL | PRODUCTION |
| STUDY ONE | Improved over last three years<br>*"Pretty good at safety, as railway operators are once into their systems."* | Good for passengers, poor for staff | Good for customer, poor for staff.<br>*"Angled towards customer above staff"*<br>*"Not happy with safety here"* | Happy overall with safety:<br>*"Give them 70% - better leadership would make it -sloppy officers breed sloppy troops"*<br>Weakness:<br>*"Organisational goal is safe working railway, they throw one obstacle after another."* |
| STUDY TWO | Safety is deteriorating<br>*"Forgotten about down here"* | Not happy with quality:<br>*"I think some of it we've gone a bit too far in the safety, gone balmy, in some respects too far"*<br>*"On the whole we endeavour to put safety first but all depends on RT and other TOUs. Got a lot of problems with walking routes, RT and the company haggling which is totally unacceptable."* | Good:<br>*10/10 on safety - goes back to rulebook.*<br>Team Briefings:<br>*"Safety is very good just team briefings that are a bit iffy"*<br>Teamwork:<br>*"Jobs not safe - quite happy with money but the job's not safe. Always worked in a team, a lot safer in a group"*<br>Size:<br>*"Very big organisation and being so open its very hard to maintain a satisfactory safety level unlike a factory"* | Improving at safety:<br>*"Improving policies all the time. Two years ago was very lax, something had to happen."*<br>Happy with safety:<br>*Give them 80%. Go OTT too much. Too much pen and paper, too much bureaucracy.* |

***Table Ten: Quality of Safety Matrix***

### 9.2.1.2 *Quality of Safety*

Table ten shows the findings on the topic quality of safety. This covers perceptions of safety and its strengths and weaknesses.

Study One revealed that most were happy with the quality of safety but that the emphasis was more on passenger/customer safety. The production workforce were satisfied with safety both in Study One and Study Two, but acknowledged that there was still room for improvement. At Study Two production and commercial management were dissatisfied with safety, reasons included excessive bureaucracy and problems resolving safety issues. The commercial workforce were happy with overall safety with a few caveats, these being a failure of team briefings, RPIs working in groups and the problems of organisational control.

| MANAGEMENT OF SAFETY | MANAGEMENT | | WORKFORCE | |
|---|---|---|---|---|
| | COMMERCIAL | PRODUCTION | COMMERCIAL | PRODUCTION |
| **STUDY ONE** | Checks and spot checks, H&S walkabouts, fire precautions, delegate safety responsibility to team leaders, and safety briefings<br><br>*"SMS very good but workforce not committed."*<br><br>*"Solution to safety weaknesses is to write more procedures"* | Safety plan, Rulebook, safety briefings, H&S walkabouts, report items to H&S reps. Reactive:<br><br>*"tend to get things done by accidents happening"*<br><br>Propaganda:<br><br>*"Only wish they'd do what they say they're going to do"*<br><br>Restrictive:<br><br>*"Too many restrictions to carry out duties - who's at fault don't know."*<br><br>*"Bombarded with procedures so that job becomes unworkable"* | Checks, hazard identification, briefing staff, rulebook, unions - role of h&s rep<br><br>*"Excellent, cos anything that happens and they're onto it*<br><br>*"Safety gone a bit overboard now - not that things were okay before."*<br><br>Personal Violation<br><br>*"Take verbal abuse form now have to an accident one instead. Did it the first STUDY but not anymore can't be bothered with paperwork. It originally worked and now back to square one"*<br><br>Management Violation:<br><br>*"have no health and safety walkabouts"* | Rulebook , safety guidelines, common sense and walkabouts.<br><br>*"safety of railway is that book"*<br><br>Over the top :<br><br>*"all dictated to you"*<br><br>*"Far too complicated in recent years, all form-filling, reports, interviews - all safe systems have to be good but get browned off with phone call and form-filling"*<br><br>Out of Touch:<br><br>*"Management can't actually bring out the safety aspect as don't have much to do with actual safety"* |
| **STUDY TWO** | Observation of staff to ensure compliance.<br><br>Bureaucratic:<br><br>*"Too much emphasis on paperwork".*<br><br>Slow:<br><br>*"Slow and frustrating but thorough and necessary. If operate and use the system works well"*<br><br>*"Don't respond as quickly as they might"* | Training, development and assessment of drivers, maintenance and assessment of standards. Unions: emphasis on H&S reps in the management of safety<br><br>*" From management side reasonable relationship between H&S reps and management which works quite well"*<br><br>*" Restrictive practices - track side phones"*<br><br>*"Okay with us its other companies"*<br><br>*"Gone for overkill on safety, and certain things still lacking. Poor cab environment is more important to them than anything else."* | Team briefings and rulebook. Difference between formal and reality:<br><br>*"Official words don't always relate to the job which leads to problems. A lot of time need relevant safety stuff worded so they understand it"*<br><br>*"As near as possible a good way of looking at safety requires more of an input from all levels"*<br><br>Failure to communicate:<br><br>*"Yes and No, don't seem to get much information about safety issues, less than we used to get. Get no feedback from higher management on safety issues"* | Briefings, drink and drugs policy, rulebook.<br><br>*" Seems to be a lot of time and money on trivia, but genuine don't want to part with money. Always works in management's favour"*<br><br>*"Well a lot of safety things are thought out by people who haven't done the job, don't consider time or anything."*<br><br>*"Down to privatisation all got to improve standards to sell company."* |

***Table Eleven: Management of Safety Matrix***

### *9.1.2.3 Management of safety*

Table eleven covers research findings on management of safety. This topic covers the formal mechanisms within the organisation for dealing with safety matters. The category also investigates opinions of the management of safety.

The management of safety looks at what participants believed constituted safety management. Responses typically mentioned safety checks (walkabouts) and the rulebook. Management's responses were more comprehensive than the workforce's and included delegated responsibilities and dealing with health and safety representatives. By Study Two safety briefings had entered into responses by the workforce.

Responses concerning the effectiveness of this management for Study One identify the systems as reactive, and over the top. Over the top covers responses which refer to the safety management system as restrictive and bureaucratic. Further these perceptions were recounted by the commercial workforce as resulting in violations, either by management or by the workforce. At Study Two, management view safety management as bureaucratic and restrictive. They perceive that certain problems are still in place. Problems identified by management relate to the problems of a multi-company environment, where certain safety issues are the responsibility of other organisations and are not resolved. The workforce also recognised this problem and mentioned the fact that things are not always resolved due to finances. The workforce however identify a failure to consult and feedback as a key issue in the management of safety and reasons for systems failure.

| SAFETY CUTTING CORNERS | MANAGEMENT | | WORKFORCE | |
|---|---|---|---|---|
| | COMMERCIAL | PRODUCTION | COMMERCIAL | PRODUCTION |
| **STUDY ONE** | Aware that corners are cut by the workforce.<br>*"Depends on what it is, always a limit as to how far you'll go."* | They occur:<br>*"Do variations on the book like"*<br>Cause:<br>*"Safety standards breached because of lack of understanding"* | Corners are cut:<br>*"Safety is uppermost but risks can be taken and corners cut."* | Business:<br>*"once management turn their backs - as a unit in the shed isn't making money"*<br>*"if any safety is breached its personal safety, never when others are involved. Can't play with other's lives"*<br>*"It won't affect safety, most are okay if coming back in over 12 hours"*<br>*Drivers:*<br>*"someone does part of job and keeps everybody happy. Good system as everyone is happy so its good for safety"* |
| **STUDY TWO** | Management view of workforce:<br>*"I think there's a temptation to cut corners, not saying they will for safety but need to guard against"*<br>Personal viewpoint:<br>*"With penalty fares a slight worry we have"* | Management cutting corners:<br>*"In a way higher management turn a blind eye if they want something done in a hurry "quickly and safely" but want it quickly. If stop a job for safety you're a bloody nuisance."*<br>*"as soon as we go home everyone forgets safety. At night do unsafe practices"*<br>Operational necessity:<br>*"Operational aspects of their job, a 1001 things they do to cut corners, otherwise job grinas to a halt"*<br>*"Not where safety is concerned. Always tempting but safety is drummed in, can see results of cutting corners - people get killed - motivates, drummed in while training, sense of self-preservation"* | Hidden 18:<br>*"Safety is compromised as can only work a maximum of 12 hours and did 16 hours and fiddled the roster and nothing happened and okay in the end"*<br>Management:<br>*"They're cutting corners safety wise - as we're not updated enough"* | Nightshift:<br>*" On nights getting service ready - do it quickest way possible.*<br>Risk Assess<br>*"Cut corners - I do within safe limits. Common on depot"*<br>Management:<br>*"you're supposed to have access to inside and outside of train but for years have walked around on certain roads and on certain roads told to do checks inside but can't look for brakes inside."*<br>*"Management aware it goes on - it saves them time and money, turn a blind eye cos its saving them money"* |

***Table Twelve: Cutting Corners Matrix***

### *9.2.1.4 Cutting Corners*

Table twelve shows the matrix on cutting corners. Cutting corners as a topic was distinctive because a question was asked about it and responses were clear.

At Study One everyone acknowledged that corners were cut in the organisation; however most believed this did not jeopardise safety. This was most prevalent in the production function. Reasons attributed for cutting corners was achievement of business objectives such as cutting corners in train maintenance, and violating Hidden regulations (DoT, 1989) by allowing drivers to work over twelve hours. Other facets were less critical and involved jeopardising personal safety through fiddling work rosters.

At Study Two management recognised they cut corners, particularly concerning budgets and increasing revenue, in the maintenance of trains and in revenue inspection. The paradox is that in train maintenance there has been no increase in accidents reported, whilst for revenue protection inspectors there has been a dramatic increase in reported incidents. Management recognised that corners are cut but that this is difficult to change, and that everyone has a sense of self-preservation, so won't jeopardise safety.

The workforce at Study Two acknowledged cutting corners but recognise that management do too, and that also they implicitly allow it to occur. Again the workforce are highly safety conscious and stated that corners they cut don't jeopardise safety.

| SAFETY ACCIDENTS | MANAGEMENT | | WORKFORCE | |
|---|---|---|---|---|
| | COMMERCIAL | PRODUCTION | COMMERCIAL | PRODUCTION |
| **STUDY ONE** | Can prevent accidents by improving the Safety Management System | Can prevent accidents by realistic goal setting:<br>*"By setting realistic goals, if its realistic to run one train a day and do ten then that'll compromise safety"* | Ascertain blame:<br>*"Keep tabs on accidents and incidents to ascertain who's at fault and get a clear picture."*<br>Luck:<br>*"Very good at safety - not many accidents - touch wood cos there's a lot of things that could cause accidents."* | Learn by mistakes in railways, do it once and it could be fatal. |
| **STUDY TWO** | Causes attributed to human error<br>*"Had safe systems but lapse of concentration led to accident"*<br>Rare:<br>*"Few and far between"* | | | |

***Table Thirteen: Accidents Matrix***

### *9.2.1.5 Accidents*

Table thirteen shows a matrix which covers accidents, their causation and organisational responses.

This category was difficult to build as many participants had no acknowledged experience of accidents. At Study One management's responses to accidents focused on how to prevent accidents occurring, hence commercial management believed improving the Safety Management System decreased accidents, whilst production emphasised the importance of realistic goal setting. The Commercial workforce attributed luck as the main reason for the rarity of accidents, whilst production believed in trial and error and experienced staff. Study Two found commercial management identifying human error as a source and that few accidents actually occurred whilst production workforce felt under-investment was the cause of accidents.

| SAFETY VULNERABILITIES | MANAGEMENT | | WORKFORCE | |
|---|---|---|---|---|
| | COMMERCIAL | PRODUCTION | COMMERCIAL | PRODUCTION |
| **STUDY ONE** | Lack of consultation<br>*"Verbal abuse forms - changed system from 1 side to a 5 page accident report."* | Fail to communicate<br>*"Okay at safety if receive good information"* | Pressure:<br>*"could be better if not so much pressure of work".*<br>Policy just there to look good:<br>*"don't even follow policy - just there to look good"*<br>Delays and Cost:<br>*"Chase up everything. Action poor from management. Makes no difference how dangerous it is, the more it costs the longer it is."* | Business:<br>*"Always told be management that not bothered about the morning service but can't expect the job to be done 100% safely"*<br>*"Not happy with safety. Make suggestions "its a good idea but it'll cost too much" that's the usual reason."*<br>Slow:<br>*"Railtrack - very slow and lots of problems"* |
| **STUDY TWO** | Unhappy with safety:<br>*"get no briefs and huge number of assaults"*<br>Respond slowly:<br>*"I run my safely, unless chasing was done here nothing would happen. Action happens not from form-filled but chase, chase, chase. Good at safety but have to follow through- have to take ownership so what's point of forms if have to chase it yourself"* | External causes:<br>*"Okay within own company but other's company's don't think things are priority, but early days yet"*<br>*"its the infrastructure problems. Underfoot conditions, lack of lighting, vegetation growth, Railtrack's problems"*<br>*"Management's hands are tied with Railtrack - bang head against brick wall"* | *Cost:*<br>*"Keep saying no money, sooner close us down than change us. BR a financial mess, safety is where feeling the pinch, not adhering to it at all."*<br>Respond slowly:<br>*"From management point of view feedback from staff is poor and then won't report things again as nothing gets done. Stops at Headquarters "leave it with us" and you hear no more - very frustrating as can't get anywhere".*<br>*"making an effort - see things are getting done- very slowly. RT are negligent in coming forward about who will pay. RT give no action, may be that's where the problems lie."* | Poor:<br>*"Don't think very good personally - sort of jump on a band wagon"*<br>Uninspired<br>*"Whoever is responsible for safety is not one for thinking on his feet. Don't have anything fresh."*<br>*"Look at feasibility and cost of job. Costs money to keep to legislation so they don't."* |

***Table Fourteen: Vulnerabilities Matrix***

#### *9.2.1.6 Vulnerabilities*

Table fourteen covers vulnerabilities and therefore those comments regarding organisational shortcomings about safety.

This category referred to problems from the workforce. At Study One management identified failures in communications as a weakness with respect to safety. Whilst the workforce highlighted financial constraints as the main problem, with cost being cited as the reason for things not being resolved. They also cite pressure, whether implicit or explicit as a further issue. External organisations were cited as problematic. Accidents happening was identified as a cause for the resolution of safety issues, a number acknowledged forging accident reports to achieve this end point.

At Study Two there was overall dissatisfaction with safety. For management this relates to the problems of resolving safety issues, in terms of delays and external companies. Whilst the workforce identified cost and external agencies as the main problem.

### 9.2.2 Incidents

The next section shows the matrices for the topic of incidents. Sub categories include: incident reporting, compliance with reporting procedures, and management action.

| INCIDENTS<br>INCIDENT REPORTING | MANAGEMENT<br>COMMERCIAL | <br>PRODUCTION | WORKFORCE<br>COMMERCIAL | <br>PRODUCTION |
|---|---|---|---|---|
| STUDY ONE | Aware of system.<br>Dissatisfied with change to verbal abuse forms<br>Use system and try to stop hazards<br>*"Generally report hazard and rectify it personally"* | Aware of system.<br>Assumption that it is effective<br>Aware of responsibility<br>*"Carry out responsibility and report again and again"* | Ignorance & lack of understanding by workforce:<br>*"Don't report as don't understand"*<br>*"Forms could be simpler. Can't fill it all in"*<br>Team Leaders: emphasis on briefing reporting systems<br>*"Well briefed on it"*<br>Report hazards:<br>*"Rectify it myself or report it"* | Depot - no culture of reporting:<br>*"Don't have need for them as we're immune to accidents"*<br>Perceived as a very complicated system<br>Report in duplicate<br>Procedure for reporting them is very good - shouldn't happen but it does |
| STUDY TWO | System exists but workforce are<br>*"Blasé about it"*<br>Overall dissatisfaction with hazard reporting:<br>*"Don't report as nothing gets done"* | Perception that the system is paper heavy<br>*"Too many forms"*<br>Disillusioned with hazard reporting:<br>*"Report and nothing gets done"* | Aware of system but:<br>*"Hell of a lot of forms"*<br>Dissatisfaction with hazard reporting as perception that nothing changes:<br>*"Don't report as nothing gets done"* | Aware of systems<br>*"Have to report them all"*<br>At depot no formal system:<br>*"Put it right if can or see foreman"*<br>Driver aware of reporting systems |

***Table Fifteen: Incident Reporting Matrix***

### *9.2.2.1 Incident Reporting*

Table fifteen shows the matrix of incident reporting, this refers to systems within the organisation for reporting incidents, accidents, and hazardous situations and environments.

At Study One everyone was aware of the systems for reporting incidents within the organisation. Management believed that the systems were effective. Whilst the workforce for both functions showed ambivalence to these systems believing them to be too complicated. Team Leaders place a high emphasis on briefing these systems.

At Study Two there is a perception by production management and the commercial workforce that reporting systems are too bureaucratic and that the quantity of forms should be reduced. Drivers, a sub-set of production workers, believed in reporting everything subject to a few caveats, including not getting a colleague into trouble, and an emphasis on technical faults.

At Study One all groups of participants had an awareness of the reporting system and reported things which were unsafe. This was accompanied by a proactive response in the commercial function which related to rectifying any hazardous situations. The production function emphasised the necessity of reporting things a number of times for the system to be fully effective. This perception was shared by everyone (with the exception of the production workforce) in Study Two as disillusionment and delays were resulting in an ineffective system and a move towards non-compliance.

| INCIDENTS<br>COMPLIANCE WITH PROCEDURES | MANAGEMENT | | WORKFORCE | |
|---|---|---|---|---|
| | COMMERCIAL | PRODUCTION | COMMERCIAL | PRODUCTION |
| STUDY ONE | Believes that organisation is compliant with policy with exception of verbal abuse<br>*"Verbal abuse will fall dramatically"*<br>Personally proactive<br>*"Try to find out what happened and prevent it"*<br>Organisation - reactive<br>*"Report all the time and nothing is done"* | Drivers not compliant, in depot not an issue<br>*"Drivers don't report as shooting themselves in the foot"*<br>Other organisations are reactive and slow:<br>*"Report to Railtrack and get results six months later"* | Dissatisfaction with system:<br>*"Make up forms for passenger accidents to get action"*<br>*"Reporting things and get no change, so start thinking haven't seen it as nothing gets done."*<br>Organisation is reactive, and don't get any feedback:<br>*"Report it and get half-arsed reply six months later"* | Non-compliant both drivers and depot staff:<br>*"Bind to fill in forms, 70-30 don't."*<br>Reactive towards staff, proactive towards customer:<br>*"If customer had accident they'd be done straightaway by law"*<br>*"If passenger safety do it straightaway* |
| STUDY TWO | Belief that organisation complies and that RPIs to the letter of the policy:<br>*"RPIs flooding the market*<br>Reactive:<br>*"Action happens only as a result of chasing it up"* | System deemed effective and workforce complies with it<br>This company is proactive but other organisation's slow and reactive:<br>*"This company part is okay - its follow-up procedures that are lacking"* | Mainly compliant (evidence of individual risk assessments - make a decision about risk). However they don't report verbal abuse as<br>*"it comes with the job"*<br>Very reactive at resolving hazards:<br>*"reported platform but then customer broke ankle and did it straightaway"*<br>*"They don't do anything"* | Not fully compliant<br>*"Most avoid it"*<br>*"Old timers tell us not to hand it in".*<br>*"Should report but you know what a human is".*<br>*"Turn a blind eye"*<br>No feedback received, action is delayed:<br>*"Don't hear anything back for weeks"* |

***Table Sixteen: Compliance with Procedures Matrix***

### *9.2.2.2 Compliance with Reporting Systems*

Table sixteen shows responses relating to the extent to which participants comply with reporting systems.

At Study One, there was acknowledged non-compliance with the systems, although commercial management only acknowledged this for the reporting of incidences of verbal abuse. Some of the commercial workforce stated that they forged customer accident forms to get hazards rectified, this is associated with the belief amongst the workforce that action only results following a customer accident.

By Study Two management believed the organisation complied fully with systems, but that the Revenue Protection Inspectors were going too far and flooding the system. The workforce however did not admit to complying with the system. Commercial workforce do personal risk assessments to determine whether they should report; whilst the production function do not report at all, in part due to idleness. Non-compliance is attributable to delays, lack of feedback and the reactive nature of the organisation.

| INCIDENTS / MANAGEMENT ACTION | MANAGEMENT | | WORKFORCE | |
|---|---|---|---|---|
| | COMMERCIAL | PRODUCTION | COMMERCIAL | PRODUCTION |
| STUDY ONE | Feedback on incidents - mainly on conflict avoidance<br>*"we tell them not to put themselves at risk"* | No feedback on reported items (either accidents or incidents) | Suspicious of Management and their motives:<br>*"They cover themselves management"*<br>*"Action from management poor, have to chase things up"*<br>*"They risk assess - excuse for not doing things"* | Suspicious of Management:<br>*"Walking into a brick wall with management nothing changed over years"*<br>*"Down on you like a tonne of bricks"* |
| STUDY TWO | No action taken by management so<br>*"RPIs are making a point as management don't care."* | Feel higher management are more concerned with the forms themselves than in the incident:<br>*"More interested in paperwork"* | Get no feedback or action from management:<br>*"its just a nice list for the Managing Director"* | |

***Table Seventeen: Management Action Matrix***

#### *9.2.2.3 Management Action*

Table seventeen covers participants' perceptions of management and their actions and reactions to incident reports.

Management at Study One perceived themselves as providing feedback on incidents/accidents, whilst the workforce were suspicious of management's motives and the fact that no change results from reported incidents.

At Study Two, perceptions had not changed and the majority view was that the sole purpose of reports was to provide a list of accidents for management.

### 9.2.3 Compliance and Standards

This category covers the professional safety function of the organisation; and therefore covers who they are, what they do, and how they carry this out.

| COMPLIANCE & STANDARDS<br>WHO THEY ARE | MANAGEMENT<br>COMMERCIAL | MANAGEMENT<br>PRODUCTION | WORKFORCE<br>COMMERCIAL | WORKFORCE<br>PRODUCTION |
|---|---|---|---|---|
| STUDY ONE | Lack of understanding<br>*"Holiday and Leisure - what do they do ? "*<br>*"If there's a Y in the month they all get a higher grade. C&S very good at writing procedures but don't look at how to implement. "* | Lack of interest - contempt for them:<br>*"Pain in the neck. Again its talking to people down on the ground to find out what we want instead of producing reams of paper and telling us how to work it. Not much to do with them really, don't see much of them."* | Awareness of them but fail to understand what they do:<br>*" Fucking shit, not shit because they could do some good. Don't like them, others could do better, promise a lot and deliver little. Could do better."*<br>*"Hotel and leisure - never introduced. Very little to do with them."* | Ignorance<br>*"Heard of them but don't know who they are , "Hotel and Leisure Group" ?"*<br>*"No - come up with departments and something out of James Bond - spend tax payers money on made up stuff."* |
| STUDY TWO | Ignorance:<br>*"Hotel and leisure - don't know what they do - wouldn't like to comment. There's a lot of people but who knows."* | Improved as a function:<br>*"They've improved a lot. From worst dept at* Headquarters *now one of the best compared to the others. "*<br>*"A lot of junior managers are not competent. Sore point at depot - secretaries are promoted to managerial posts and then ask us how to do their job."* | Lack of understanding:<br>*" Mr Wade and others."*<br>*"Not a lot of dealings with them. Just a couple of electricians down to check the classroom. Only dealings have been pretty quickly dealt with."*<br>*"Term bandied around, is it a book of standards."* | Ignorance:<br>*"Never heard of them. All safety we get is over in that cabin"*<br>*"Not had many dealings with - told a lot about them. Wiser men than me who say its a load of waffle."*<br>*"Waste of bloody time and money."* |

***Table Eighteen: Who they are Matrix***

### *9.2.3.1 Who they are*

The first sub category displayed in Table eighteen is who they are, and therefore are responses of participants about what they understand Compliance and Standards to be.

Overall at Studies One and Two there is a ignorance over the identity of Compliance and Standards. Many people referred to an idiom "Hotel and Leisure", or "Holiday and Leisure" meaning that the function served no useful purpose within the organisation. Within the workforce a number were interviewed who had no idea who Compliance and Standards were, and confused it with other functions, most notably premises, who resolve safety items at stations and platforms. Commercial management in both studies commented on the staffing levels within Compliance and Standards, and promotions within the group.

| COMPLIANCE & STANDARDS<br>WHAT THEY DO | MANAGEMENT<br>COMMERCIAL | MANAGEMENT<br>PRODUCTION | WORKFORCE<br>COMMERCIAL | WORKFORCE<br>PRODUCTION |
|---|---|---|---|---|
| STUDY ONE | Understand what they do but not fully effective:<br>*"Do have to have somebody with responsibility for safety and in charge of overall process, but fail to see full value. "* | Develop systems but don't consult:<br>*"Documents which we burn in a ritual fire. Nice if someone came and talked to us."* | They don't consult<br>*"Audits not in conjunction with and are contentious in their findings to justify their existence."* | Not useful:<br>*"Not a lot. Look at standards of safety, procedures. Risk assessment, accidents, incidents, near misses. From own experience - no good feedback from them to us, what feedback is too in-depth and involved. Not for man on the shopfloor."* |
| STUDY TWO | Take care of legal side, but there are problems implementing systems:<br>*"Its an important department - protects the legal aspect of the company. doing job for us all - the pedantic and nit-picking things - very nit-picking but very necessary. They did safety case - without that wouldn't operate."*<br>*"Need people to deliver it outside at stations - not very good."* | Distribute standards:<br>*"Hear about new standards but never see them, costs money to reproduce them and we can't have them and need to do our job properly."* | Put out procedures:<br>*"Have this Ivory Tower put out procedures, not fully conversant with ways of railways and don't get paper saying its not working."* | Not aware of who they are or what they do. |

***Table Nineteen: What they do Matrix***

### *9.2.3.2 What they do ?*

Table nineteen covers the purpose of Compliance and Standards and how these are carried out.

At Study One all groups of participants commented on the purpose of the organisation, however there was a perception that the function did not consult and therefore that the systems were not fully effective.

At Study Two the production workforce were not aware of what they do. Whilst commercial and production management and commercial workforce were aware of what Compliance and Standards did (e.g. audits and document systems) but were not happy with the execution of these tasks. Criticisms related to individuals qualifications to perform these tasks.

| COMPLIANCE & STANDARDS<br>HOW THEY DO it | MANAGEMENT<br>COMMERCIAL | MANAGEMENT<br>PRODUCTION | WORKFORCE<br>COMMERCIAL | WORKFORCE<br>PRODUCTION |
|---|---|---|---|---|
| STUDY ONE | Out of touch and don't consult<br>*"Problem is that they 're rather distant from reality - rather frustrating. They deliver something for all the company and don't consider what is in place"*<br>Too much firefighting:<br>*"Its all fire fighting. Had safety audits for three years and then C&S start doing them and for all the company and haven't discussed. the company - everything we've had on railways was not all bad - identify what's bad and what's good and work out what to change".* | Out of Touch and don't consult<br>*"Don't consider needs - this is your new procedure, old one worked but can't use it. Produce loads of paper and standards, trains don't get there any earlier."*<br>*"No one has consulted anyone on the ground. C&S haven't come down and asked, and bottom crunch of it is that we've got to use theirs now. Getting more and more now, now that C&S have got their feet under the table."*<br>No confidence in them:<br>*"No confidence in them. Empire building. Takes work from other areas and quality of work is poor. "* | Don't consult<br>*"Don't consult just do it, all right but did a good job here before."*<br>Don't get much necessary information from them:<br>*"Rang C&S and asked when video and leaflets would come, and they had never heard of it. System here with other areas to get information. I shouldn't be telling them, they should be feeding it back to me."* | Systems necessary but Over the top:<br>*"Only had makers instructions rather than detailed way of how to do it. Some are OTT - situation if you're involved with it, not a thing you can always recall."* |
| STUDY TWO | Not competent<br>*"Large number of people but not enough are skilled at what they do, don't think they pick up on big things".*<br>Skilled and very helpful<br>*"Wealth of opportunity and people to assist you e.g. C&S - know who to go to for accurate up-to-date information"* | Not competent<br>*"Haven't competence, can get very technical - have to take Traction Inspectors judgement on these things"* | Don't consult<br>Don't follow up audits<br>*"Could do a better job, if before going ahead with something they consulted us. They produce stuff which has to be altered if gone into a bit more would be okay"*<br>*"Have periodic audits which aren't followed up. Never discuss it with us. Its all policy decision."*<br>*"Too much sneaking around, staff sell tickets don't take in jargon, so don't understand what's been said. Staff resent being done - need to resolve things rather than nit-pick."* | Don't know |

***Table Twenty: How they do it Matrix***

#### 9.2.3.3 *How they do it ?*

The matrix on Table twenty covers the way that Compliance and Standards carry out their function.

At Study One the consensus across all participants interviewed was that Compliance and Standards failed to consult with anyone about existing systems and were out of touch with operational reality. They felt that this resulted in systems which were ineffective, poorly implemented, and poorly regarded within the organisation. Further, it reinforced feelings within the organisation that Compliance and Standards was an empire with poorly qualified and incompetent staff. A number also displayed resentment towards Compliance and Standards regarding information they felt Compliance and Standards should supply, but hadn't and a failure to inform them of new systems.

At Study Two, none of the participants from the production workforce had any knowledge of the organisation and its systems. Comments from management concerned the competence of Compliance and Standards, and there was a feeling that they lacked the technical competence to perform their jobs adequately. The issue of failing to consult also emerged within the commercial workforce where individuals believed that if they were consulted, audits and systems would be more effective. A manager within the Commercial function believed Compliance and Standards to be skilled and helpful, when questioned it emerged that this related to the technicalities of the safety case.

### 9.2.4 Management

This topic is subdivided into three categories: executive management, senior management and local management. The first to be discussed is executive management. The summary matrix is displayed on the following page.

| MANAGEMENT | MANAGEMENT | | WORKFORCE | |
|---|---|---|---|---|
| EXECUTIVE MGMT | COMMERCIAL | PRODUCTION | COMMERCIAL | PRODUCTION |
| STUDY ONE | Managing Director: Like him and respect his ability in his role.<br><br>The rest of executive management are weak.<br><br>*"Managing Director is very good. Excellent speaker and great motivator. Unfortunately his exec don't live up to that."*<br><br>*"Feel that MD has a weak exec."* | Managing Director and executive management don't like:<br><br>*"Failing of basic man-management and knowing the troops. Not sure of competence of managers - do our jobs and go home, instead of professional tuned to do a job."*<br><br>*"MD shame he doesn't make himself more visible, most wouldn't know him. Shame really cos he's a nice bloke, just they haven't a clue who he is"*<br><br>*"MD visited a month ago. Came in and out via the back door, travels by car. Word gets round the personal touch is gone. If people want respect they need to earn it."* | Managing Director like and respect, but needs to make himself more visible:<br><br>*"I like Managing Director - met him once and made an impression - he is very decisive. If you asked him, if wouldn't buff you up with political crap."*<br><br>*"MD is a clever chap, let down by some of the people under him - sycophants, people with not an original thought in their head. Man management skills leave a lot to be desired."*<br><br>*"Managing Director not out enough, so believes what his managers tell him. Could do with a day on the station. Any level management don't know, 9-5ers stuck in an office."* | Executive Management never met them:<br><br>*"Better leadership would make it. Leader of pack he's the man - sloppy officers breed sloppy troops - that's the way it breeds. If management turn their eyes workforce will try to get away with it."*<br><br>*"Present day guvnors don't come near you unlike past ones."*<br><br>*"Bandy a name about and assume you know who they are. Chris Green is the top man"* |
| STUDY TWO | Managing Director has a difficult job as there's no certainty so there's no decisions.<br><br>*"Managing Director has a hard task to juggle all the balls at the moment."*<br><br>*"Everyone's waiting. No long term policy decisions which is affecting everybody. Knocks onto investment and budgets - minimal compared to a year ago"* | Executive management have difficulty making decisions:<br><br>*"All at top and not really right decisions, definitely a communication problem here."*<br><br>Lack of consultation:<br><br>*"Again its down to lower level not being listened to, or investigating problems. If they did this would help immensely."* | Out of touch, and communications block:<br><br>*"Top management are not aware of the situation. There's a certain situation and gets blocked and gets no further and being insubordinate if try to bypass it. The truth doesn't get to them."* | Not overtly mentioned |

***Table Twenty-two: Executive Management Matrix***

### *9.2.4.1 Executive Management*

Executive Management as a category covers opinions of the Managing Director and his executive managers, and the matrix displaying responses is shown on Table twenty-one.

At Study One most individuals liked and respected the Managing Director, however there were some doubts about the quality of his Executive Management team. With the exception of Commercial managers and the Production workforce, other participants believed that the Managing Director needed to meet his workforce more often to ensure his wishes are carried out effectively. Production workforce were not aware of the Managing Director's identity but stated that the organisation required better leadership to be succeed.

At Study Two, Executive Management were not explicitly mentioned by the Production workforce. Commercial and Production management both referred to the problems of the executive management team due to the political environment and the difficulties making decisions and making investments. Production management also mentioned the failure of communications and that if consultation took place then management could make more effective decisions. Commercial workforce also referred to a communications block as the reason for ineffective management as management were not aware of problems at the lower levels of the organisation.

| MANAGEMENT | MANAGEMENT | | WORKFORCE | |
|---|---|---|---|---|
| SENIOR MGMT | COMMERCIAL | PRODUCTION | COMMERCIAL | PRODUCTION |
| STUDY ONE | Senior management secretive and top heavy:<br><br>*"Senior management play cards close to chest and will not release information to the last minute and normally rumour has spread around."*<br><br>*"Top heavy but not enough support at this level. Not enough staff at bottom level, foundations shaky, house built from the roof down - supposed to be high profile but...."* | Senior management don't listen and focus on budget:<br><br>*"Another gripe, management not listening to those on the ground."*<br><br>*"New breed of management on railway - dinosaurs are leaving. Budget is the biggest word on the railway. Told we're over budget and can't use men on their rest days but doesn't mean much to us as we have a service to run - its still the customer that pays our wages."* | Ivory Tower<br>Consult and Keep informed<br>Top heavy<br>Budget<br>Out of touch with reality<br><br>*"Headquarters is seen as an Ivory Tower."*<br><br>*"A lot of people should come down here and say what they intend doing."*<br><br>*"Top heavy. Should be like a pyramid but more like an upside down one."*<br><br>*"Management are totally out of touch with the workforce. No words, they're out of touch and that's the problem.* | Lack of contact<br>Ivory Tower<br>Top Heavy<br><br>*"Ivory Tower affects feeling on the depot - don't know people to speak to."*<br><br>*"Management are top heavy. Only got to look at phonebook and look at secretaries etc., not all necessary."*<br><br>*"Upstairs instructions don't make sense, might make more sense in a boardroom but to us down here doesn't."*<br><br>*"Run by cowboys with university degrees. Seems to be no policy to headhunt decent management."* |
| STUDY TWO | Change necessary for privatisation.<br><br>*"A lot emanates from commercial manager - shaper focused and time scale is shorter."*<br><br>*"A lot of change required before offer to privatisation, everyone accepts it - general view has to be done. As a company is very robust. Needs to develop as a business, instead of a public service - a very political viewpoint. Needs to be commercially aware to succeed."* | Patronise<br>Organisational Divisions<br><br>*"Management patronise in newsletters and briefs. Not treated like adults, instead passenger charter this and that."*<br><br>*"BR, and us, - production and commercial never the twain shall meet, created a barrier against own people, so stick to own."* | New Commercial Manager<br>No Feedback<br><br>*"Financial manager figures that's all he's interested in - don't think of contributing factors "*<br><br>*"Mr X the new financial manager has got knowledge of the railways but is very abrupt and very financially minded."*<br><br>*"Get no feedback from higher management on safety issues."* | Top heavy<br>Management selection<br><br>*"No - too much middle management - a load of buffoons I call them, overrun with them. Only got to look around here - if had a private firm wouldn't have all these. All middle management do is throw paper at you."* |

***Table Twenty-two: Senior Management Matrix***

### *9.2.4.2 Senior Management*

Table twenty-two covers all material about management above the level of line management and below executive management, so it is mainly managers within Company Headquarters.

The consensus at Study One was that management was top heavy, and that there are too many managers for the size of the organisation. A further dimension shared across the organisation was a lack of contact between management and the workforce making consultation and communication difficult. This is typified by statements by the workforce in both functions that refer to the organisation's headquarters as an Ivory Tower. The workforce also believed that management are ill-suited because they are graduates.

At Study Two there was a recognition that change was necessary for privatisation and that the new Commercial Manager was achieving this. Production management felt patronised by organisational communications and felt that organisational divisions were destructive. Commercial workforce also acknowledged the role of the new commercial manager although they actually referred to him as the finance manager. Production workforce were not satisfied with management as they felt that there was too many of them and that many were incompetent.

| MANAGEMENT<br>LOCAL MGMT | MANAGEMENT<br>COMMERCIAL | MANAGEMENT<br>PRODUCTION | WORKFORCE<br>COMMERCIAL | WORKFORCE<br>PRODUCTION |
|---|---|---|---|---|
| STUDY ONE | Local Level - devolved management style<br>*"More efficient, drive at local level to solve safety and consider eventualities "*<br>Team Leader - local manager, devolved accountability:<br>*"Team leader the key to everything. Have day-to-day minute by minute contact ... they pick up the majority of problems."*<br>*"Team leaders in charge of COSHH - much more accountability at area level"*<br>*"Management system driven from a local level - more efficient, drive at local level to solve safety and consider eventualities."* | Lack of managerial support<br>*"If something did go wrong wouldn't get the backing from management. A prime example is my manager who wouldn't discipline staff which belittles me in front of workforce."* | Satisfied with local management: problems further up with money:<br>*"Best manager I've ever worked for. A way of getting things across."*<br>Team Leader is buffer between management and staff<br>Rapport in team<br>*"Team leader are the buffer between front-line staff and management policies and decisions."*<br>*"The word is teamwork, but people at Headquarters have forgotten about the team."* | Satisfied with local management:<br>*"Local management bend over backwards to help you out."*<br>Lack of teamwork but can see its use<br>*"Management are always trying to stitch the workers. If everyone worked together it would be really good, they try and stitch us and we try and get them back"* |
| STUDY TWO | Lack of management commitment<br>*"Management commitment is a conflict because want to be seen to do things but..."*<br>Importance of teamwork<br>*"Need to work as a team. Working together as a goal."* | Satisfied with local management<br>*"Manager credits us with respect. Stuff from Headquarters leaves a lot to be desired, hardly read any cos a load of rubbish."*<br>*"See manager every day. Nigel is all right, no problems there - quiet supportive of problems. Fortnight and he'll get an answer".*<br>Not fully successful<br>*"Trying hard but could do a lot better, people not working as a team."* | Happy with immediate management - but not those above:<br>*"Basically D&P are on our side but no one else is."*<br>*"Run by cowboys shoddy. Goddard and Doyley attitude wrong - cut corners and save pennies. Absolutely ludicrous."*<br>Teamwork good but other problems:<br>*"Attempt to do the best we can but do wonder with some managers and difficulties arise from so many things"* | Happy with Local Management:<br>*"All in all they are. If something going on they'll let us know."* |

***Table Twenty-three: Local Management Matrix***

#### *9.2.4.3 Local Management*

Table twenty-three covers data gathered about local level management.

Commercial management acknowledged that they devolved their responsibilities through team leaders, and that they were satisfied with this system at Study One. The commercial workforce had mixed reactions about the team leader notion, some feel that the system works well, whilst others perceive it as an excuse for lack of direct management. The production function did not operate a team approach but could see its utility.

At Study Two commercial management failed to show commitment to safety due to conflict further up the hierarchy. The other groups remain happy with local and immediate management, but feel difficulties emerge further up the hierarchy.

### 9.2.5 Communications

The topic of communications covers a summary of all material relevant to the topic of communications. Sub-categories are; quality, topics covered, problems encountered, reasons attributed for success and failure, and opinions of communications within the organisation.

| COMMUNICATIONS QUALITY | MANAGEMENT | | WORKFORCE | |
|---|---|---|---|---|
| | COMMERCIAL | PRODUCTION | COMMERCIAL | PRODUCTION |
| **STUDY ONE** | Doubts about quality of communications:<br>*"Need to look at quality, carry them out but..."*<br>*"Could do better"*<br>Audience not receptive to message:<br>*"Improved them but whether people take it in."* | Communications not effective:<br>*"Okay if get good information, but mostly don't".*<br>Problems with Communication systems:<br>*"Not cascaded down. They think systems are in place but forget to tell everybody. Once down they work, with a bit of tweaking."*<br>*"Ivory Tower push pens and don't understand the real world."* | Information down poor:<br>*"Or lack of it - down to privatisation because no one knows what is going on."*<br>*"Information down is very poor."*<br>No idea of future plans<br>*"haven't got the full picture of management's plans for the future - which is a damning indictment of higher management."*<br>One-to-one briefs:<br>*"Don't have them team leaders one-to-one that's not a briefing - less likely to answer questions and can't concentrate on it"* | Communication slightly improved:<br>*"Severe lack of communications at every level - slightly better with Nigel."*<br>Communications one-way:<br>*"With safety briefings just get told things. All one way. No conversations - you're told and that's it, you will do this."* |
| **STUDY TWO** | Don't believe briefs are any good:<br>*"In any company information could be better. Spend a fortune getting information to us."* | Believe communications have improved:<br>*"Quite good now but its all information they want to give out"*<br>Briefers are effective:<br>*"Happy with the way they carry it out"* | Communication good when system is effective:<br>*"Good at moment its only their information. Immediate management good"*<br>Information is poor<br>*"Good get information whether they get and if they get it late, its not their fault"*<br>*"Timetables, rush things out, better tell staff, time from 6 weeks before makes them look incompetent, they don't think of ground staff"* | Communication good:<br>*"Have a team brief (that's what they call it) and point out things, some are put right and some aren't"*<br>*"If something going on they'll let us know."*<br>Not much on safety<br>*"Useless information - not much on safety anymore"*<br>*"Some okay others a load of rubbish."* |

***Table Twenty-four: Communications Quality Matrix***

### *9.2.5.1 Quality*

Table twenty-four topic covers the quality of the communication mechanisms in the organisation.

At Study One management acknowledged that there were problems with the communication systems within the organisation. These ranged from doubts about the quality of the information to specific problems with the communication process, in terms of the audience not being receptive, and management being out of touch. The commercial workforce were disillusioned with communications, and felt that future plans concerning privatisation were not communicated effectively, and the problems of one-to-one briefs. The production workforce were slightly more positive than the others, feeling that local management communicated to the best of their knowledge, but that the information they did receive was predominantly one-way.

At Study Two, all groups except commercial management, stated a belief that communications had improved, and that relevant information is being given out. The Commercial management believed that a lot of resources and time is spent communicating but that this is not effective. The workforce though still believed that the information given out could be better and more timely, and attributed some of this to higher management not communicating effectively to their immediate managers. The production workforce believed the safety content of the briefs was insufficient and mainly irrelevant.

| COMMUNICATIONS TOPICS | MANAGEMENT | | WORKFORCE | |
|---|---|---|---|---|
| | COMMERCIAL | PRODUCTION | COMMERCIAL | PRODUCTION |
| **STUDY ONE** | safety systems, topical issues, grudges, problems, performance, safety-related issues.<br>*"Keep it short and sweet"*<br>*"Brief the need to comply with systems"* | Rulebook, traction items, Feedback on inquiries.<br>*"a lot of what their job entails and driver enjoy".*<br>Briefs examined prior to briefing:<br>*"Contents of these analysed to see whether it meets the criteria of being wholly directed towards safety - only so much can do in an 8 week period, and only so much to update"*<br>*"Safety briefings work if right materials are in them"* | Local safety issues and happenings, information, company policy and leave arrangements.<br>*"Tell people to keep their eyes open and ensure things are safe"*<br>Irrelevant material:<br>*"Totally different from the real world"*<br>*"Often things that don't concern us. Of course I dismiss them straightaway - a pie chart of Bletchley traincrew performance figures recently. That's not relevant".* | accidents, safety topics, disciplinary, rule changes, new items, grievance and speed restrictions.<br>*"No good information unless it suits them"* |
| **STUDY TWO** | Customer care and revenue, safety, procedures, SRS, safety critical work, new information relevant to their role, station information, safety of station<br>*"Boring safety stuff"*<br>*"Emphasise the importance of keeping eyes open"* | Safety case, documents and procedures<br>*"Briefing packs - some of early topics were irrelevant. Content is absolutely shit, not kept to standard. Could use it as a good tool there's no need to know topics, eg. Accident statistics for whole organisation are neither here or there."* | Isolations and taking the power off, points they need to know, finance, booking office security, rulebook.<br>*"stuff that is important to management"* | Safety aspects and local issues<br>*"They tell us what we should be doing"* |

***Table Twenty-five: Communication topics Matrix***

### *9.2.5.2 Topics*

Table twenty-five covers those topics that participants identified as items covered in team briefings.

When questioned at Study One, most people identified safety items as components of the team briefs, and therefore covered safety systems, rulebook and local issues. The Commercial function also identified business type issues as components of the brief such as performance, grudges and leave arrangements. The commercial workforce believed that the material in the briefs is irrelevant, and does not apply to the real world. The production management were positive about the information they gave to staff, however this was not reflected in the perceptions of their workforce who believed they did not give out good information.

Study Two found divisions about the content of briefs. The production management only identified safety issues, whilst the commercial management placed the emphasis on business issues, and the workforce considered both safety and business. At Study Two management from the functions of production and commercial believed that the quality of information is poor, this is reflected in the perceptions of the workforce who feel that they only receive stuff that is important to management, such as orders on how to carry out their job.

| COMMUNICATIONS PROBLEMS | MANAGEMENT | | WORKFORCE | |
|---|---|---|---|---|
| | COMMERCIAL | PRODUCTION | COMMERCIAL | PRODUCTION |
| **STUDY ONE** | Overwhelm people<br>*"Can swamp people"*<br>Attention of audience difficult to maintain:<br>*"they switch off in two minutes"*<br>Irrelevant information<br>*"Needs to be targeted to their corner of the world"*<br>Logistical problems<br>*"Time a problem - difficult to pull them away"* | Lack of interest in briefs:<br>*"Its good, a day out get paid for 8 hours and it takes on and a half hours"*<br>Lack of feedback on issues of concern:<br>*"Management are good at giving out what they want you to have but bad when you want an answer. Have to chase up reports"*<br>Rumour driven organisation:<br>*"So many rumours going round - can't keep in touch."* | Management Propaganda<br>*"Good at information they want us to know"*<br>*"No one knows what's going on"*<br>Rumours:<br>*"Lots of rumours not dispelled"* | Problems with communication:<br>Rumours:<br>*"Rumour from last year - trains to Gatwick - grew very strong, never anything in writing, created vacancies etc., and it never took place because of Railtrack charges. They never said to us this is what we wanted to do but it never came off, sorry"*<br>*"No piss poor cos no one knows what's happening. Run on rumours. Staff always the last to know."* |
| **STUDY TWO** | Overwhelm people:<br>*"Comes down in sackloads but not relevant or workable"*<br>Irrelevant information:<br>*"90% irrelevant - sift out the important points"*<br>Lack of higher management commitment:<br>*"Lip service push folder down and that's it briefed"* | Irrelevant information:<br>*"Don't do it all, harder to find relevant things in packs, not fault of people who produce it, as both to blame. Include feedback forms but don't report back"*<br>*"From Melton House leaves a lot to be desired, hardly read it cos its a load of rubbish"*<br>Ignore brief:<br>*"Brief is a requirement but staff ignore it. They revert to normal working practice whatever"* | Receive the brief but:<br>Can't remember<br>*"Brief it down but can't remember it"*<br>Don't take the message in:<br>*"Can't gauge if taking it in but if on paper could read it"*<br>Not relevant:<br>*"Their idea of what's going on is no idea at all"* | Receive no feedback from management:<br>*"Get no feedback from higher management on safety"*<br>Lack of commitment to information from management:<br>*"A lot of people giving out information don't know how railway works."* |

*Table Twenty-six: Communications Problems Matrix*

### *9.2.5.3 Problems*

Table twenty-six considers the various aspects that prevent the communication systems from being successful.

At Study One rumours were identified as one of the principle problems within the organisation. For the workforce the key issue was management's failure to dispel the rumours, and where it had been a positive rumour explain to people the true story and events. Consequently the workforce believe that they are always the last to know and are not in the communication loop. There was also a perception within these groups that the only information transmitted down through the hierarchy was what management wanted you to know, hence the perception that the briefs contained management propaganda. A further problem identified by management at Study One relates to the failure of cascade briefs in the organisation due to a lack of interest by the audience, this would seem to be linked with the paucity of information in the briefs.

At Study Two information in the briefs is still perceived as irrelevant. By Study Two the management of both functions were sifting out the important parts from briefing packs and omitting irrelevant information. A number of managers were disillusioned with their manager as they were not briefed themselves which lead to feelings of disappointment and disillusion. The workforce were non-specific about briefs, only acknowledging that the information was not relevant and that they didn't take the information in. A topic also raised was the fact that management had no experience of events at ground level and therefore how could they give advice to the workforce.

| COMMUNICATIONS SUCCESS | MANAGEMENT | | WORKFORCE | |
|---|---|---|---|---|
| | COMMERCIAL | PRODUCTION | COMMERCIAL | PRODUCTION |
| **STUDY ONE** | Attempted to overcome rumour<br>*"Chinese Whisper - quickly briefed staff once it was realised it was out"* | Increased interest in safety<br>*"Get people talking a bout safety"* | Group briefs are successful:<br>*"Better in group as ask questions and take it in, not just nodding"*<br>Get feedback:<br>*"Pick someone at random and get them to recite the BRIMS number"* | No statements about the success of communication |
| **STUDY TWO** | Attempt to gauge understanding:<br>*"Top down stuff not always passed down - briefed - pass down cascade, put in own words - close loop by going down and see whether people have got the message"* | Local management good:<br>*"Local management are fair enough at giving out information."*<br>*"Drivers opened up a bit and got into the day. For drivers its a cushy day - gone for overkill on safety and certain areas still lacking and destroy. Need to find a balance."* | No data attributing success | Getting better as can relate to local issues. |

***Table Twenty-seven: Communications success Matrix***

### *9.2.5.4 Success*

The matrix show on Table twenty-seven relates to individuals attributions of success in team briefings. The data was scarcer on this topic than the following which discusses how they fail.

The production workforce did not mention any reasons of success of the cascade process at Study One, and at Study Two believed they were getting better due to the increase in local issues on the brief. At Study One commercial management attempt to overcome rumour, production management believe that briefings increase people's awareness about safety, and the commercial workforce emphasise the importance of group briefs as opposed to one-to-one briefs.

At Study Two the commercial management were displaying a more proactive attitude by emphasising the importance of discovering the success of briefings within the organisation. Whilst production management showed a high belief in the efficacy of local management in transmitting information through the hierarchy. Commercial workforce make no comments during Study Two.

| COMMUNICATIONS FAILURE | MANAGEMENT | | WORKFORCE | |
|---|---|---|---|---|
| | COMMERCIAL | PRODUCTION | COMMERCIAL | PRODUCTION |
| **STUDY ONE** | Dull message:<br>*"Can be a boring process - same message every four weeks"*<br>Lack of briefing skills:<br>*"Lack basic briefing skills which leads to a conflict between them and staff"*<br>Logistics:<br>*"Shortage of staff and closing stations, fall down at lower ends as we can't brief as well as we'd like to."*<br>*"Communicated this for years to Retail Management, okay to say close a station but manager goes berserk"* | Cascade doesn't work:<br>*"Dissemination doesn't happen"*<br>No caring attitude<br>*"Lack compassion and personal touch"*<br>Management are not honest:<br>*" They're not honest and don't state their intentions* | Briefs too long<br>*"After five minutes our attention drops after half an hour have no idea what has been said".*<br>No up-to-date information<br>*"Performance given in such a way that people aren't bothered"*<br>One-to-one briefs<br>*"No safety briefings - supposed to have one once a month. Team leaders put down that we've attended. Team leader's one-to-one that's not a briefing - less likely to answer questions, can't concentrate on what you're meant to be doing"* | Audience cynical:<br>*"Monthly safety briefings but when certain aspects of the job are breaking rules. But actual safety is allowed to continue - I brought to their attention about it being against law to work without a safety harness.*<br>Useless information<br>*"Gaggles of management giving out information, intimidating and browbeaten. Giving out useless information, only good information is from the depot"*<br>Information blocks:<br>*"Communication block - sends out instructions, if he were to talk to staff he could think them out before he sends them"*<br>*"Information gets to a certain level then stops"* |
| **STUDY TWO** | Audience inattentive:<br>*"One hour of safety and everyone switches off."*<br>Briefers lack communication skills:<br>*"Presenters are poor"*<br>Dull message:<br>*"Difficult as can only talk about safety the first time"* | Audience don't listen<br>*"Doesn't get through as they don't want to listen"*<br>Upper management poor:<br>*"But all of them decisions are made by very high up management and I think should have been more working together to develop schemes to compete with TOUs. All at top and not really right decisions"*<br>Topics irrelevant<br>*"No one consults about what you want in it and we don't feedback as we're not interested, need to come down to staff and captivate "*<br>*"Information is out of date and we're out of touch with the company".* | Miss briefings<br>*"On Nightshift miss briefings as they don't like to release you from nights."*<br>Local management good, above poor:<br>*"Partly down to team leader and ASM as they're not given the information."*<br>Retail Bulletin<br>*Some aspects fallen down a bit - used to have Retail Bulletin - a lot of useful information - issued to us all. Don't get it anymore which is stupid."*<br>Problems with briefing material:<br>*"Got no real input in meetings"*<br>*"Briefer not interested"*<br>*"Pack filled with jargon"*<br>*"Generalise but on railway needs to be specific."* | Content of briefings poor:<br>*"Video means nothing to our job."*<br>*"Once a month have a meeting that is not relevant."* |

***Table Twenty-eight: Communication Failure Matrix***

### *9.2.5.5 Failure*

Table twenty-eight displays failure as a sub category and discusses the range of reasons attributed for the failure of the organisation to communicate successfully.

A range of reasons were given for the failure of the briefing system within the organisation. Commercial management focused on the dull message, poor briefing skills and the logistical issues of briefing to a geographically diverse workforce. These complaints were repeated at Study Two of the research, although no emphasis is placed on the logistical issues. The production management believed that communications fail because management do not care and fail to transmit essential information through the workforce. At Study Two similar complaints apply and are attributed to higher management not putting decent information in the pack. They do acknowledge that they should feedback this to higher management but are too disillusioned to.

The commercial workforce at Study One believed that the brief is too long, that the information is out of date and that one-to-one briefs are a problem. This is consistent with management who at Study One identified logistics as a problem with briefing. However as with commercial management, the workforce no longer identified this as a problem, although night shifts are acknowledged as a briefing weakness. The commercial workforce at Study Two, also identified weaknesses in the briefing pack, jargon and lack of participation as reasons for the cascade failing. The production workforce at time one were cynical about cascade briefs and believed them to exhibit double standards by preaching one thing and then doing another. This is compounded by a belief that there are communication blockages and that what information does get through is poor. At Study Two comments from production showed complete disregard for the briefs, mentioning irrelevant videos and dismissing the entire brief.

| COMMUNICATIONS | MANAGEMENT | | WORKFORCE | |
|---|---|---|---|---|
| **OPINIONS** | **COMMERCIAL** | **PRODUCTION** | **COMMERCIAL** | **PRODUCTION** |
| **STUDY ONE** | Morale Low<br>*"Morale poor because of non-communication of reasons for change. Morale decreasing"*<br>*"Rumour is the biggest way on the railway of communicating, it can be rife and very destructive because they don't have all the information only half"*<br>Retail Bulletin<br>*"Retail Bulletin - how much is actually read by everybody "that sort of bureaucracy seems a total waste of time"*<br>Takeaway from meetings<br>*"Frank Sweeney does the format - quite useful to have it to takeaway"* | Morale low<br>*"Morale is the pits. Suffering from a lack of direction and continuity of managers"*<br>*"Its a problem - morale drops - rumours need squashing like that"*<br>*"Performance - nice to tell people if we're doing well cos that boosts morale"*<br>Influence on workforce<br>*"Northampton depot closure - 100 men there, whose lives and futures were at stake - management denied it, someone leaked it to the papers before management told the men. Playing with people's lives"*<br>*"Upper management have difficulty making decisions so they don't"*<br>No Feedback<br>*"Non-answer of communications - not addressed in the correct manner. Have no manners, that's what's annoying"* | Morale low<br>"Feeling of uncertainty, morale, causes tension between passengers and staff"<br>Top Management (in)visibility<br>"Communication is very slack, no communication between top level and bottom. If Mr Gibbard and Managing Director went out and about a bit more instead of making decisions in a board room then they'd find out what people wanted"<br>Information Timing:<br>"Tend to get more information out of passengers. Information on the grapevine - get new diagrams in nearly two weeks and no one has a clue what's coming - no idea that's the thing until the last minute" | Morale low<br>"Ivory tower affects feeling on the depot - don't know people to speak to"<br>"Morale depends always get rumours, losing work, what's going to happen, depots closed. Always rumours, in 2 and a half years nothing has happened. Don't just mope around. Morale is good, rumours start and then die down"<br>Too Late<br>"When at Northampton went to see boss and he said it was being discussed (depot closure) - next day it was in the newspaper"<br>Lack of Consultation<br>"Like Northampton - they knew months before, management tried to stuff us with redundancy payments" |
| **STUDY TWO** | Lack of Retail Bulletin<br>Not interested in briefs<br>*"Down to lack of bulletins and briefing no longer very interesting"* | Briefings good on health and safety:<br>*"Health and Safety not a waste of time all have an obligation under health and safety"* | Headquarters seen as out of touch with organisational reality:<br>*"Have this Ivory Tower - put out procedures, not fully conversant with ways of railway and don't get paper saying its not working"*<br>No consultation:<br>*"Should have meetings with us to discuss. Its all a policy discussion, need to be involved to voice our opinions and liaise"* | Obsession with Paperwork<br>Keep workforce informed |

*Table Twenty-nine: Communications Opinions Matrix*

### *9.2.5.6 Opinions*

Table twenty-nine displays opinions voiced about the communication process in general and the effects of this on the organisation.

All groups of participants at Study One identified poor communications resulting in a decrease in morale across the organisation. They all believed that morale was decreasing due to non-communications of the reason for change, and the fact that rumours were not quashed, which lead to a further decline in morale. The workforce also identified the timeliness of messages as central to the organisation, with a perception that they never received information on time, this was particularly prevalent in the production function concerning the closure of a traincrew depot. Management in production concurred with the opinion of the workforce on this issue and believed that management were playing with people's lives and that they deserved a little respect.

At Study Two most were dissatisfied with the communication process and believe that the crux of the matter is management being out of touch with the workforce and therefore unable to effectively communicate within the organisation.

## 9.3 SUMMARY OF FINDINGS

Overall little evidence of change was found in the study. Perceptions were quite negative and were not always consistent with the findings from the attitude survey. The next chapter will discuss the implications of these findings for the organisation, and the following will link these to the academic literature. The final discussion chapter discusses the wider implications of the research findings.

# CHAPTER TEN

## *Discussion of Results*

> There is much good luck in the world, but it is luck. We are none of us safe.
> We are children, playing or quarrelling on the line
>
> E.M. Forster, The longest journey

This chapter is the first of three chapters which comprises the discussion and interpretation of the research findings of the thesis which were described in chapters six, eight and nine. This chapter discusses the findings of the research and their implications for the Train Operating Company. The second discusses the research implications with reference to safety culture and the research literature; whilst the third discussion chapter discusses the critical implications of the research on future work, and critically reviews the research methodology. The final chapter in this thesis forms the conclusions and summarises the main findings of the research.

## 10.1 INTRODUCTION

The current chapter discusses the findings of this research. The results are initially discussed with reference to each component of the results chapter. These findings are integrated into a coherent description of the organisation's safety culture.

## 10.2 MANAGEMENT'S PERCEPTIONS

The findings from this stage of the research reveals management to be aware of the organisational problems. Many of their problems concerned communication process; consequently they devised organisational strategies to remedy this. The strategies proposed were:

- Appointment of a Communications Manager;
- Development of a cascade briefing system;
- Guidelines on briefs format: two-way flow, less than one hour in length, and trained and competent briefers.

Further problems identified by management related to organisational culture issues, such as unreceptive audience at briefings, a workforce culture of doing the minimum

work, a large management-workforce gap, barriers to organisational change, and a lack of involvement by the workforce. Management proposed that many of these issues could be resolved through the successful implementation of a communication cascade. Despite the focus of the interviews being safety and communications, safety issues were marginal and mainly related to the problem of duplicated systems within the organisation, and the subsequent development of the function 'Compliance and Standards'. This function was experiencing problems with credibility within the organisation and in carrying out safety audits. It was proposed by the management group that the purpose of Compliance and Standards and its importance would be communicated and result in acceptable safety management systems.

From the outset of the research there was a belief that communications were the source of many problems and that by implementing a cascade briefing system that these problems could be resolved. Through communications management believed Compliance and Standards would be accepted, that the workforce would be committed and that everyone would identify with, and work towards organisation goals. The effect of change resulting from these communication strategies is examined and discussed in this chapter.

## 10.3 COMMUNICATION PROCESS

### 10.3.1 Cascade briefing topics

This stage of the research was conducted following the implementation of the briefing process, approximately eight months after the system's development and incorporation. The first stage of analysing the content of the briefing materials involved an analysis of the topics covered and a discussion of the implications and meaning of what was communicated through the cascade.

The content of the cascade briefs can be summarised, on the basis of the topics covered in *Briefing Matters*, thus:

- patronising in tone, an emphasis on 'management' speak and the use of the word 'we'. The brief also contradicted itself, and used 'we' about management, rather than the workforce;

- safety was insufficiently covered and focused on statistics and safety management systems, i.e. the emphasis was on systemic safety as opposed to operational safety. The final pack examined, covered manual handling, an operational issue which was relevant to the entire

organisation. It is difficult to ascertain whether this was a conscious change or an exception;

- the majority of the briefs covered business issues with an emphasis on the financial difficulties the organisation faced. Much emphasis was placed on the budget and how 80% of the organisation's costs were fixed; i.e. the 20% of the budget, which went on wages, was the only cost that management could control.

- Briefing Pack number 14 was noticeably different from the other three packs. It is speculated that a report submitted to the company by the researcher possibly resulted in the change to the process. Key recommendations which they seem to have assimilated, include: improving the safety content of briefs; and reviewing composition of *'Briefing Matters'* to ensure it contains information relevant to the audience. The report fed back findings to the organisation on how the communication process was failing in practice.

Overall this review reveals briefings designed by management to transmit information to the workforce. They were generally difficult to operationalise and threatening. Consequently the cascade process was patronising, gave information which was difficult to act upon and was not relevant to the workforce's day-to-day role. The safety topics were also difficult to operationalise and focused on the Safety Management System, and did not tackle the 'real' safety problems of the organisation as perceived by staff. The final pack reviewed showed a change in the content of the process, it is hoped that this change is maintained and further developed.

### 10.3.2 Content Analysis

Within the results section another type of review was performed on the content of Briefing Matters. This was an objective content analysis which broke down the briefs into component parts. Overall there were few differences found between the briefs. Commercial and Financial Managers, when composing the business component of the briefs focused on the customer, as opposed to passenger, which is the emphasis for safety. The distinction between passenger and customer matches the organisational culture where the workforce define themselves according to their role in moving passengers, whilst management view them as customers who purchase a service from the Train Operating Company (as opposed to providing a service). The safety component of briefs refer to them as passengers as this is a distinction made in terms of accident reporting.

An analysis of the pronouns 'we', 'our', and 'you' shows a reduction in their usage over the six month period and that these words were more prevalent in the business component of the pack. It is hypothesised that this is because the intent of the business component was to attain commitment to the organisation, and therefore there was an emphasis on the idea of pulling together and working towards the common goal of business success. Whilst the safety component was factual and sought compliance rather than acceptance. All of the briefs were factual. However the tone, content and relevance to the organisation varied.

## 10.4 OBSERVATION OF CASCADE BRIEFS

The previous sections have covered the content of material passed through the cascade and discussed the topics covered, the length and the types of words used within these. This section discusses the implications of the findings related to the execution of the briefing process through the hierarchy. One of the principal findings from this is that the briefing cascade is not fully effective within the organisation. As a result management's intent for the briefing process is not a reflection of organisational practice.

Management intended the brief to involve the use of "Briefing Matters", using the script and the slides to communicate these messages down the hierarchy consistently, and as a consequence for organisational members to behave in a productive and safe manner. The cascade would allow two-way communication. They also intended that safety and business issues be covered and that wherever possible the briefs should be to a group, rather than an individual.

What was discovered in this research was the wide degree of variation and the lack of consistency in a process developed to overcome these problems. The organisation as a whole was not complying with organisational policy of briefing the entire pack. Three out of the eleven briefs attended did not use the formal material at all. A number of the groups were using out-of-date briefing packs. Few questions or inquiries were made. Interest in the meeting was variable. The lengths of the meetings ranged from ten minutes to three hours. The average was about an hour and a half. On the whole the further up the management hierarchy the longer the meeting and the more minor the contribution of 'Briefing Matters'. The meeting agenda varied widely. It ranged from informative to 'bad mouthing' management, and ensuring people sign pieces of paper declaring attendance. Only one group used the official script and this was the top level commercial brief. Others just selected relevant slides and read from each slide.

It is important to recognise that few of the briefs attained audience interest in the briefs, and that the audience's attitude was that generally briefs were a necessary evil and did not meet their needs. Perceptions of communications were also investigated in Study One and Two, and the findings are discussed later. Overall the cascade process does not comply with the wishes of management nor with the desires of the workforce. The process does have some successes and it is important for the organisation to optimise these features and translate best practice into organisational convention. The following section discusses the communication process with reference to barrier analysis, identifying the various steps in the communication process where the process fails. The idea is to consider the underlying reasons for the breakdown in the communication process and attempt to overcome these.

## 10.5 BARRIER ANALYSIS

The communication process is shown in the format of a barrier analysis on Table Thirty. It attempts to incorporate the key findings concerning the cascade briefing process. The diagram shown is linear in format so it is therefore important to recognise the loops within the diagram: a briefer will be both a briefer and a member of the audience (with the exception of the Managing Director). The diagram attempts to locate the sources of the various problems identified in the analysis of the communications process.

The communication process has five key stages where the process could fail: barriers sending message, barriers to reception, barriers to understanding, barriers to acceptance, and barriers to action. Hence the process is dependent on the absence and weakness of these barriers for effective communication. Each of these barriers act to a greater or lesser extent on the process of communication. Some of the barriers will immediately halt communications, whilst others are less powerful.

| CASCADE BRIEFING | BRIEFER | AUDIENCE | SOCIAL/ENVIRONMENT |
|---|---|---|---|
| **BARRIERS SENDING MESSAGE** | Unaware message needed<br>Inadequate information in message<br>Prejudgements about message<br>Prejudgements about the source of message<br>Distrust in management<br>Prejudgements about the audience<br>Personal characteristics | Doesn't attend | Shift patterns<br>Rosters<br>Closure of booking office |
| **BARRIERS TO RECEPTION** | Pass pack down<br>Do not brief<br>Brief cynically | Needs and anxieties<br>Beliefs and values<br>Attitudes and opinions<br>Expectations<br>Prejudgements<br>Attention to stimuli - so switch off<br>Cynicism | Effects of other environmental stimuli e.g. noise, distractions<br>Logistics - room not available<br>Fatigue - scheduling of briefs |
| **BARRIERS TO UNDERSTANDING** | Semantics and jargon<br>Communication skills - not trained<br>Length of communication<br>Communication channel - face-to-face | Semantic problems - too complicated<br>Concentration - after 10 minutes people switch off<br>Listening abilities<br>Knowledge<br>Prejudgement<br>Not receptive to new ideas | |
| **BARRIERS TO ACCEPTANCE** | Personal characteristics<br>Dissonant behaviour<br>Attitudes and opinions<br>Beliefs and values | Attitudes, opinions and prejudices<br>Beliefs and values<br>Receptivity to new ideas<br>Frame of reference<br>Personal characteristics | Interpersonal conflict<br>Emotional clashes other problems<br>Status differences<br>Group framework of reference<br>Previous experience of similar interactions |
| **BARRIERS TO ACTION** | Memory and retention - forget what should be briefed<br>Level of acceptance - cynical from start to finish, not receptive to audience's feedback. | Memory and attention<br>Level of acceptance<br>Inflexibility of change in attitudes & behaviour<br>Personal characteristics | |

*Table Thirty: Barrier Analysis*

The barriers which were identified on Table thirty are elaborated below.

## 10.5.1 Message Not Sent

### BRIEFER

*Not aware required*

- Briefer does not understand the purpose of cascade brief;
- The full message is not communicated;

*Incomplete transmission of information*

- Inaccurate information is given out;
- Incomplete information is given out.

*Prejudgements about the audience*

- Assumes audience know more than they do;
- Assumes audience are not interested;
- Assumes audience is stupid.

*Prejudgements about the source of knowledge*

- Management are not committed to the process;
- Lack of satisfaction with content of message e.g. too detailed, not relevant, too complicated;
- Distrust of management.

*Personal characteristics*

- Lack of confidence in ability to communicate and motivate the audience;
- Bored of message or disillusioned with task.

### AUDIENCE

*Audience not present*

- Audience do not go to meeting;
- Audience are not invited.

### ENVIRONMENT

*Shift patterns - much of the workforce work shifts and little effort is made to brief them;*

*No venue available for briefings*

## 10.5.2 Message not Received

### BRIEFER

*Gave brief to wrong people*

*Overlooked some individuals*

### AUDIENCE

*Did not attend the briefing*

*Did not pay attention to brief*

*Needs and anxieties*

- Anxious about job;
- Want assurances about job security;
- Worries about train service and privatisation.

*Attitudes and Opinions affecting receptiveness*

- Management don't communicate, so why bother listening;
- The company only cares about profits and not people.

*Expectations so do not listen/attend*

- Same message, nothing new;
- Message is management propaganda.

*Prejudgements*

- Believe management are not committed to the workforce or the message;
- Believe management are internally divided;
- Believe management are out of touch with workforce.

*Cynicism*

- Related to prejudgements;
- Believe management are good at information they want workforce to know and nothing else;
- Rumours not dispelled, so management obviously don't care about workforce.

### ENVIRONMENT

*Too noisy*

*Distractions*

*Not compulsory so don't attend*

## 10.5.3 Message not understood

### BRIEFER

*Semantics and Jargon*

- Message not put into context;
- Vocabulary beyond workforce or using jargon.

*Communication skills*

- Briefer not trained so poor message transmission;
- Incapable of communicating successfully with a team;
- Incapable of briefing one-to-one.

*Message characteristics*

- Assume audience have more knowledge than they do;
- Briefing is too long;
- The briefer summarises briefing.

### AUDIENCE

*Semantics and Jargon*

- Message too complicated, so don't understand;
- Uses complex language, so don't understand.

*Personal Characteristics*

- Attention span limited to ten minutes;
- One-to-one briefing inhibits questions;
- Not receptive to new ideas;
- Not motivated to process message.

*Message Characteristics*

- Do not understand the communication process;
- Do not understand the message.

*Prejudgements*

- Audience do not believe what they are told by management;
- Audience make assumptions on the basis of faulty and incomplete knowledge

## 10.5.4 Message not accepted

### BRIEFER

*Personal characteristics*

*Dissonant Behaviour*

*Attitudes and Opinions*

- Management not interested in workforce;
- Only brief to comply with system;
- Costs and budget are the main concern of briefer.

### AUDIENCE

*Attitudes, opinions and prejudices*

*Beliefs and Values*

*Receptivity to new ideas*

- Monotonous message;
- Not interested in new ideas;
- Same message each month.

### ENVIRONMENT

*Status differences*

- Team leader has divided loyalties;
- Information as power within the organisation;
- Not trusted by workforce or management.

*No action taken as a result of previous briefs*

### 10.5.5 No action taken

**BRIEFER**

*Memory and retention*

- Forget what should be briefed.

*Level of acceptance*

- Briefer is cynical from outset;
- Briefer is not receptive to audience's feedback.

**AUDIENCE**

*Memory and retention*

*Level of acceptance - audience is:*

- Cynical;
- Bored;
- Not interested in other parts of organisation.

*Flexibility for change in attitude*

- perceive themselves as undervalued and unappreciated.

*Low morale*

- Unwilling to take initiative;
- Work to rule.

As the barrier analysis clearly illustrates successful communications are dependent on many steps. This organisation displays communication barriers which affect the overall efficacy of communications. The implication is that the communication system is vulnerable and organisational communications are ineffective. It is important for the organisation to review its communication process and to incorporate some of the following recommendations into their process.

Fundamental recommendations include:

- Workforce input into the development of the brief to overcome complaints about the message;
- Local agendas to cover both 'Briefing Matters' as well as local issues, to get commitment of the workforce;
- Management commitment to the process to avoid cynicism;
- Give training to those with briefing responsibilities to develop confidence and commitment of briefers;

- Emphasise the importance of conducting briefs throughout the hierarchy.

Best practice was identified as:

- Tailoring the brief to the audience, this occurred in some areas of the organisation;
- Arranging cover for staff to attend briefs to overcome logistical problems in the organisation.

and points for acknowledgement are:

- the workforce are blinkered, and are only interested in their sphere of interest;
- management are bored by "Briefing Matters' and if they are bored how must the workforce feel ?

Findings from this aspect of the research shows that the intentions of management are not effectively translated into actions within the organisation. The cascade briefing process was developed to facilitate organisational change and to resolve identified problems, however this fails due to barriers to the process.

The notion of organisational culture is considered next. The first component is an attitude survey, and the second looks at changes in interview responses over an eight month period.

## 10.6 ATTITUDINAL FINDINGS

### 10.6.1 Intra-organisational

This aspect looked at differences between the organisation to identify any intra-organisational differences. The groups differentiated were management and workforce, and the production and commercial functions. The results show few significant differences between the groups. Between Production and Commercial, two significant differences were identified, these were: 'SMS hinders safe performance', and 'Instead of focusing on safety they should concentrate on the train service'. The direction of this difference indicates that for the first statement that the Commercial function disagree (x=3.8), compared to production (x=2.72) who mildly agree with the statement. The other significant difference concerns improving train service, which is seen as of lesser importance than safety to the commercial function (x=4.0), compared to production (x=2.9) who overall agree with the statement.

The differences highlighted show the difference between commercial and production. The production function are subject to more rules and the Safety Management System is viewed as more restrictive as they have a greater impact; whilst the commercial function are less affected by the Safety Management System. The question of train service highlights the cultural differences between the two, with production believing that the duty of a railway is to run an effective train service from A to B, and therefore it is predictable that they believe safety is satisfactory and that more emphasis should be put on improving the train service. This feeling is less pronounced in the commercial function as they have fewer operational staff and hence fewer members of the traditional railway culture, and safety takes precedence.

Management versus the workforce revealed three significant differences; these were 'Management are overstaffed', 'Safety Management Systems hinder safe performance' and 'Incident reports are a good idea as action always results'. Management are overstaffed resulted in a no opinion average response from management (x=3.0) whilst the workforce agree with the statement (x=2.05). The next statement 'SMS hinders safe performance' had a management mean of 4.0 (disagree) whilst the workforce have no opinion (3.16). 'Incident reports are a good idea as action always results' show that management strongly agree (x=1.7) while the workforce agree less strongly (x=2.8). The difference between management and the workforce suggest that the trend of responses were similar and that no actual differences in direction was found amongst the significant differences.

The implications for the organisation are that there are few differences between the opinions of management and the workforce, and the key functions regarding question responses, although this is not the case for the semi-structured interview responses. The crucial point is that the scores could be aggregated as all groups are similar in their response patterns. This means that the groups respond in a similar way and therefore share underlying attitudes and values. The magnitude of responses and the meaning of these are discussed in the following section.

### 10.6.2 Attitude Change

The next stage of the discussion is a comparison between responses to questions asked during the study and responses from identical questions in a survey conducted in 1992 for British Rail. The questions were divided into five sections: management, communication, safety, organisation and perceived change.

### *10.6.2.1 Perceptions of Management*

The first statement "Management make fair decisions" show that the response distribution is unlikely to have occurred by chance, and that there is a difference between response preference and the two response periods. So management are viewed as making fairer decisions now than they were three years ago. The second statement requires a response to 'Management do not understand my problems' - again the significant result suggests that this statement is disagreed with more now than then, suggesting that perceptions of management have improved and that management are perceived as understanding workforce problems. The other questions in this section did not achieve significant results indicating that there was no change between participants' responses now compared to the previous survey. 'Management have a clear sense of direction' shows a clear division in responses and no pattern, and matches the findings from the previous study. Whilst 'management style does not encourage me to give my best' shows that over half the workforce at both time periods agree with the statement.

Overall perceptions about management have changed which is reflected in the results. It is proposed that this difference could be due to the greater involvement of the workforce and the closer links with management as the company has become smaller. However these perceptions are not reflected in the change question, where 48% percent of participants now think management's behaviour has worsened, compared to the previous survey and 27%.

### *10.6.2.2 Communications*

There is no significant difference on the topics of communication, two questions reveal that the organisation is perceived as rumour-driven (80% of respondents now believe it so), and that official communications are poor (as perceived by 60% now). There was a mixed response pattern to 'I don't believe what I am told by senior management', which had an even response pattern between the categories. It is supposed that when communications are received from senior management reactions to it are mixed. The question of change reveals that more people believe communications have improved compared to the previous survey. However the percentage is still small (24%). However 40% of the respondents (the majority category) now believe that there is no change in communications. This is consistent with the other responses.

### *10.6.2.3 Safety*

A number of statistically significant results were found for the topic of safety. These were 'Overall safety is very good here', 'I am frequently worried for my personal safety at work from physical attack' and 'I am happy with fire regulations'. The direction of these shows that more people agree with the statement 'Overall safety is very good here' (88% agree now compared to 33% previously) and with the statement "I am happy with fire regulations" (100% now compared to 75% previously), however more people than before are concerned for their safety from physical assault (52% compared to 42%). Although no other significant results were attained, the pattern of results reveal participants to be satisfied with safety rules, and emergency procedures; believe machinery and equipment to be safe and have mixed perceptions about safety complaints. It is proposed that this mixed response highlights the difficulties of a multi-company environment, where responsibility for resolution of safety issues can fall to other companies. The question concerning improvement of safety reveals that 52% of respondents believe that safety has improved, which reinforces the above findings about safety.

Overall safety is perceived as having improved. There is also satisfaction with the systems in place, and the work environment. However safety complaints and physical attack are areas of concern for participants. A positive point is that when specific questions about systems are asked that positive results are attained.

### *10.6.2.4 Organisation*

The two questions under this category reveal significantly significant results. 80% of participants disagreed with the statement 'Morale is generally high' compared to the previous survey where 48% disagreed, showing that morale is considered low. With an apparent contradiction the statement 'I am seriously considering leaving the company', reveals that significantly less people now than before are considering leaving the Train Operating Company. It is possible that this has arisen because previously people could move around the railway group (i.e. leave their company but stay on the railways), whilst this opportunity is no longer available. On the question about organisational change, morale is perceived by the majority as being worse than before, which matches the question on morale.

### *10.6.2.5 Change*

The remaining questions on 'change' reveal that working conditions are viewed as significantly better than before, with 40% of participants believing that working

conditions have improved. Whilst the question on the company on the whole reveals a mixed response from participants, with 32% believing the company have changed for the better compared to 16% who believed they had improved following the previous change.

#### *10.6.2.6 Summary of Change*

From the attitude survey the organisation appears to be changing, and that on the whole it is perceived as better than in the past. Most notable and positive changes were perceptions of management and safety. Management have improved but there is not full commitment to their actions, and their behaviour on the whole is perceived as having deteriorated. Safety has improved and there was widespread satisfaction with safety systems, but mixed reactions for reactions of resolution of safety issues. Communications are widely perceived as poor, and no change could be identified, despite the range of initiatives implemented. However this result needs caution in its interpretation as the application of the questionnaire verbally, following a series of questions on safety will have affected the way participant's responded. Due to the number of questions about three questions would have achieved statistical significance due to the level of significance chosen (0.05).

## 10.7 MATRICES

A series of matrices are displayed in Chapter Nine of the Results section. These relate to the following topics: safety, incidents, Compliance and Standards, communications and management. Each of these are further divided into sub-categories. In this section these will be discussed in the light of intra-organisational differences and changes identified between the two phases of interviewing.

### 10.7.1 Safety

This was broken down into Safety Responsibilities, Quality of Safety, Management of Safety, Cutting corners, Accidents and vulnerabilities. This is not proposed as a definition of safety culture but is the way that safety was conceptualised by participants, and then categorised by the researcher.

#### *10.7.1.1 Safety Responsibilities*

All participants questioned display a strong awareness of their safety responsibilities. These safety responsibilities were in the context of the work organisation, and are relevant and realisable by participants. This means that individuals are aware of their

overall responsibilities. A further point of note is the extent to which management talk about their responsibilities for staff and the use of control to ensure staff comply with safety procedures. No change was detected in interview respondents on this topic between the two studies, which suggests it is a stable characteristic.

### *10.7.1.2 Quality of Safety*

Comments from participants regarding the quality of safety were mixed. Overall it would appear that satisfaction with safety has deteriorated between the two stages and that it is linked to the perceived bureaucracy of work systems and to the delays in resolving safety issues. It is speculated that part of this relates to continuing difficulties in the resolution of safety issues by Railtrack. There is a tendency within the organisation to externalise the causes of safety problems. This has far-reaching implications for the management of safety as the causes are difficult to resolve and the effects are apparent in the organisation.

### *10.7.1.3 Management of Safety*

All participants could cite examples of how safety management related to their job. Typically they mentioned health and safety walkabouts and the rulebook. This suggests that managing safety is not considered an organisational concern, but is related to the railway culture and its traditional rule-based culture. Opinions about the management of safety mainly focus on the concept of systems not meeting the needs of the organisation, referring to a lack of commitment, systems being operationally unrealistic and overly bureaucratic. One of the recurring reasons for system failure is a lack of consultation and feedback by the function developing these systems. A concern for commercial management related to whether the workforce complied with the systems, their remedy was to keep everyone informed of the safety management system through cascade briefs. Overall there was acknowledgement that the organisation does not comply with the safety management system and few attempted to resolve this.

### *10.7.1.4 Cutting Corners*

Cutting corners appears to be custom and practice within the organisation. Most participants said they assessed risks before cutting corners, and would not cut corners if their actions jeopardised safety. However a number of operational issues, which if carried out as individuals asserted, would jeopardise safety. One concerned the violation of Hidden 18 (DoT, 1989) to keep the train service running (i.e. exceeding driver's working hours to cover unmanned trains), whilst another involved 'prepping'

trains where the full preparation of the train could not be conducted because of problems with walking routes. The latter example was one where the workforce were instructed to violate rules by management. There was a feeling throughout the workforce that management know that corners are cut, but turn a blind eye, as business and financial issues take precedence.

Hence at an individual level the safety culture appears good in that corners are cut only when it does not jeopardise safety or only when personal safety was jeopardised. However the issue of business, and the implicit and explicit pressure exerted on the workforce reveals an alarming trend by management. The management questioned in this survey acknowledged that the workforce cut corners. Only one commercial manager acknowledged cutting corners personally. He felt this was in the implementation of the system for Revenue Protection where the system was implemented hastily and had not fully considered the safety implications.

### *10.7.1.5 Accidents*

Few participants had actually experienced accidents. Those that had experienced accidents were mainly in the form of slips and cuts, which they attributed to carelessness. Most recognised the potential for accidents within the organisation. Commercial management believe in the use of the safety management system, and perceive that if accidents do occur the principle reason is carelessness or lapses of concentration leading to violations of safe systems. Production management recognise their role in setting goals and targets carefully to avoid increased pressure which could jeopardise safety. The workforce however focus on operational issues, and the concept of blame. Linked with the concept of blame is the idea of luck in that the workforce believe that more accidents do not occur because of good luck. This is an important point for the organisational culture in that individual care and luck are the principle reason for accidents occurring. The workforce do not believe that the safety management system prevents accidents.

### *10.7.1.6 Vulnerabilities*

This topic covered shortcomings identified by participants concerning safety. There were many failings identified and no clear improvement between the two stages. The principal weaknesses concerned the delays when resolving safety issues, which were attributed to two causes, costs and Railtrack failing to resolve the issues. Communication was also identified as a shortcoming which had an impact both on the development of safety systems and their implementation.

### *10.7.1.7 Safety Summary*

Overall there was little change between the two stages of interviews. The organisation appears to have a good attitude towards safety acknowledging their safety responsibilities and behaving in a safe manner. However a number of causes for concern are the prevalence of cutting corners; the problems of resolving safety issues in a multi-company environment; the perception of luck as opposed to the safety management system in preventing accidents; and a perception that safety is deteriorating. This latter point conflicts from the findings of the attitude survey and will be returned to later in this section. These problems can be attributed to the difficulties in managing a company in a multi-company environment and the uncertain operating environment. There is no improvement in these perceptions over time and some topics have deteriorated.

To rectify these problems with safety the organisation should consider:

- Increased consultation and involvement by the workforce in the development of safety management systems;
- A survey throughout the organisation to investigate the prevalence of cutting corners and rule violations to identify methods for prevention. The role of both management and the workforce needs considering;
- Resolution of safety issues with Railtrack, and increase management profile as proactive in this regard;
- Importance of recognising strong features of organisational culture and not destroying these.

## 10.7.2 Incidents

This section discusses the implications of the findings under the category incidents, and covers the topics of incident reporting, compliance with these and management action.

### *10.7.2.1 Incident Reporting*

Overall within the organisation there is an awareness of reporting systems. There is a wide variation though in the extent to which the systems are used, with the workforce reaction, ranging from not reporting anything to reporting every instance. Reasons stated for not reporting include too many forms and 'why report if you don't have to'. Few participants believed that incident reports were important for a purpose, most

perceived it as an inconvenient duty with which it was difficult to comply. The only exception to this was with drivers who reported unsafe things to protect others, particularly technical faults. It is hypothesised that this is the case with drivers as they believe they will be blamed for most incidents, and hence protect each other. The other sector was with Revenue Protection Inspectors (RPIs) who reported everything, every incident of verbal abuse, in an attempt to get management to change their work practices.

Hazard reporting covers reporting physical faults. This was one of the few instances where opinions had changed. The first stage of interviews showed a system that was widely used and well thought of, with individuals using the system and where possible attempting to rectify a hazard. This attitude was absent at the second stage (with the exception of production workforce) where there was widespread disillusionment with hazard reporting, with the main cause relating to the lack of action. It is speculated that this change has arisen as a result of inaction following reports. This deterioration has safety implications and could result in accidents to both customers and staff.

### *10.7.2.2 Compliance with procedures*

There was a perception overall that the organisation is reactive and that accidents have to occur before changes are made. There are a variety of reasons stated by the workforce for system failure including custom and practice for drivers, idleness and a belief that action won't result. Whilst on the management side problems are attributed to Railtrack and organisational policy. There appears to be no change in the extent to which the organisation complies with the system with the exception of the Revenue Protection Inspectors. The RPIs at the second round of interviewing had been told to work singly, and as a result they felt exposed to risk, and more prone to physical and verbal assault. To prompt management action, the RPIs were fully complying with procedures and reporting every incident of verbal and physical abuse. Management's reaction was to call them "RPI whingers" and to take no action. Their belief is that it is more cost effective having RPIs working singly.

### *10.7.2.3 Management Action*

The final issue on incidents is management action, and relates to managerial response to incident reports. The workforce have no faith in management or their motives for incident reporting, it is perceived as either protection from legal action, or a pointless exercise. Whilst management are disillusioned by higher management and feel they are concerned with paperwork rather than the actual problems. There was no change in this perception over time.

### *10.7.2.4 Summary on Incident Reporting*

Overall within the organisation there is non-compliance with reporting systems. This is due in part to the lack of understanding by the workforce of the purpose of reporting incidents. However, non-compliance is further exacerbated by the lack of results and feedback following a report, which means that individuals continue not to report. Lower levels of management are getting disillusioned with higher management, which is cause for concern as less emphasis will be placed on reporting procedures. There is a perception of a two tier system driven by a fear of legal action from customers, so customer reports are acted upon, whilst the workforce's are not. This has lead to some employees exploiting this to resolve some of their safety concerns by falsifying accident reports.

The organisation should consider the following recommendations to overcome these:

- Need to eliminate the perception that reports are solely for compliance, rather than resolution;
- Need to resolve back log of safety issues;
- Need to communicate an understanding of risk assessment and procedures to the workforce, to help understand the prioritisation process;
- Need to increase commitment of higher management to procedures and to demonstrate to the workforce this commitment;
- Emphasise the importance of reporting, on an understanding of why reporting is important, as otherwise the system will not work.

## 10.7.3 Compliance and Standards

This covers different aspects of the Compliance and Standards function, the professional safety function of the organisation. It covers who they are, what they do and how they carry out their tasks.

### *10.7.3.1 Who they are*

In both Study One and Two there was a lack of understanding of who Compliance and Standards are throughout the organisation. They were considered as a 'Hotel and Leisure Group', meaning that they considered an unnecessary luxury for the organisation. The production function had little to do with the function and many were

unaware of them. Participants who were aware of Compliance and Standards were disrespectful and disregarded them. The commercial workforce consistently misunderstood their identity.

### *10.7.3.2 What they do*

Overall, there was little understanding of the function's purpose. The perception was of a function that did not consult them, so the systems developed for the organisation, as a whole were inappropriate. Commercial management was the only group which appreciated the actions of Compliance and Standards, especially from the legal side. However they acknowledged that the systems needed implementing, and not just developing.

### *10.7.3.3 How they do it*

The consensus at Study One was of a function that did not consult, so a deficient service was provided. Systems developed by Compliance and Standards were perceived as over the top and unnecessary. These opinions had not improved by Study Two where the function were still viewed as incompetent. The workforce also viewed them as not consulting them about systems and events which concerned them. Hence Compliance and Standards are not viewed in a positive light and the systems they develop are not well regarded throughout the organisational hierarchy.

### *10.7.3.4 Summary of Compliance and Standards*

Overall Compliance and Standards are not well regarded by the organisation. Difficulties arise because Compliance and Standards are responsible for developing systems that the organisation is obliged to operate, and that these changes are disliked. However it is proposed that if the purpose and background was explained to the workforce that the systems may be better received. The perceptions of Compliance and Standards has implications for the management of safety in the organisation, as they are the authors of the safety case. As a consequence, unless perceptions of Compliance and Standards improve, it unlikely that the safety case will be effectively implemented.

The organisation should consider the following recommendations:

- Explain the importance of, and underlying reasons for, safety systems.
- Consult with the workforce when developing systems, particularly when replacing an existing system;

- Communicate the purpose of the function.

## 10.7.4 Management

### *10.7.4.1 Executive Management*

Participants in Study One liked and respected the Managing Director. Some individuals within the production workforce however were unaware who he was, and felt the organisation failed to be successful due to poor 'top' management. The other groups agreed with this in that the executive management team (top management), excluding the Managing Director, was inadequate. The production function overall felt let down by executive management, in particular that they did not have greater contact with the workforce.

At the second stage of interviewing the focus had shifted from the managing director, to the perception that the organisation's challenges were demanding and that management have difficulties coping with them. One of the main reasons cited for this was ineffective communications, and hence management had problems making decisions.

### *10.7.4.2 Senior Management*

Within the workforce views of management are identical between the functions at the first stage. The perception was that senior management are in an Ivory Tower and that they are out of touch with operational reality and consequently their actions are ineffective. A further perception by the workforce is that the organisation is top heavy and that there are too many managers compared to the rest of the workforce. At the second stage these perceptions have not changed considerably, although a new Commercial Manager had made a big impact on the commercial function showing increased awareness of the financial aspects of the function.

On the management side, they view senior management to be out of touch with the organisation, which results in secrecy and poor communications with lower levels of the organisation. By Study Two there was a realisation by commercial management of the need for change. It appears in the main that this was driven by the new Commercial Manager. Production management were still disrespectful of senior management, and believe the organisation is functionally divided. Consequently the only group showing a beneficial change is Commercial management, the other groups have not changed their views towards senior management.

### *10.7.4.3 Local Management*

Overall local management are viewed positively within the groups interviewed. Where problems were identified at this level the source of these problems was attributed to individuals higher in the organisational hierarchy. Within the Commercial function a lot of emphasis is placed on the role of the team and team leaders, and the importance of devolved power. Local management are well regarded within the organisation which is possibly linked to their proximity to the workforce.

### *10.7.4.4 Summary of Management*

Higher management are not well respected within the organisation. One of the main causes for this is linked to the changes in the organisation due to the privatisation of the railways and massive uncertainty. A problem appears to be that communications are poor. However management are also operating under uncertain conditions, and it is not always possible for them to communicate with the workforce. The implications of the findings are that management policies will fail to be effectively implemented if perceptions of management continue to deteriorate. The high perceptions of local management by the workforce, and local management's disdain for higher management creates a gulf between higher management and the rest of the organisation. It is proposed that devolution of power and increased consultation could turn this about. Other recommendations include:

- Increase communications from top management to the workforce;
- Consult with the workforce about changes which concern them;
- Continue to devolve power down the hierarchy from higher management to local management.

## 10.7.5 Communications

This section reviews the findings on communications and discusses changes identified under the various topics.

### *10.7.5.1 Quality*

Perceptions of the quality of communications had not changed within the organisation despite the implementation of a consistent cascade process within the organisation. Overall the information transmitted was perceived as poor, not targeted correctly, and the information was usually late. There was a perception by production management

at Study Two, that communications had improved, but that this was only in information that management wanted transmitted to the workforce.

### *10.7.5.2 Topics covered*

There is a perception throughout the groups that the information transmitted is not relevant. There was no change in this perception across the groups between the two studies. The workforce considered the information to be propaganda, in that it was information that management wanted the workforce to know, rather than being things that they wanted to know.

### *10.7.5.3 Problems encountered*

This category attempted to identify people's perceptions of communication failure. At Study One communications in the form of rumours were an extremely successful mode of transmitting information. However rumours destroyed morale and lead to official communications being disregarded. Further difficulties related to logistical problems, attention problems and the paucity of information. There was no noticeable reduction in complaints about communications in the organisation at the second stage, but there was an increased complaint that the information was not relevant. The workforce attributed this to the fact that management did not understand how the organisation operated.

### *10.7.5.4 Reasons for success*

There was not much information available on attributions of communication success. Most of the workforce could not identify reasons for communications succeeding. Some managers showed local, or individual, efforts to improve communications at their locations, and increasingly there was a belief that local management were improving communications at the lower levels of the organisation. This did not correspond to the perceptions of the workforce.

### *10.7.5.5 Reasons for failure*

There were many reasons attributed for communication failure, from comments about management, the message, the audience, the length of the brief and logistical issues. At Study Two, the management of both functions are aware of why and how communications fail within the organisation. Few managers however suggested how they were going to overcome these difficulties within their area of responsibility. Overall it appears as though there has been no change in the efficacy of

communications and that the problems are similar between the two studies suggesting few local efforts to improve the process.

### *10.7.5.6 Opinions*

At Study One morale was acknowledged to be low, and this was linked to uncertainties within the organisation as well as problems with rumours. Rumours were perceived as degrading morale because quite often they were negative and destructive If they were positive and the event did not occur then morale also dropped. Opinions of management dropped, as they fail to quash rumours. One exception was a proposed move of the train maintenance depot to a new site, which was leaked and resulted in management quickly briefing the truth to the workforce, to overcome the rumour.

### *10.7.5.7 Summary of Communications*

Communications within the organisation are not satisfactory, and the findings here are consistent with the other research findings. It is proposed that solutions to communications will occur when the recommendations suggested earlier are followed, particularly those concerning the organisational culture and communications.

## 10.8 THE TRAIN OPERATING COMPANY'S SAFETY CULTURE

Table Thirty-one which continues over the following pages is a summary of the research findings displayed in the form of responses to questions in the safety culture prompt-list. The safety culture was assessed post-hoc with regard to the ACSNI safety culture prompt list (HSC, 1993). The ACSNI prompt list was designed "to probe to a greater depth... safety culture". A summary table of the questions and the company's performance is detailed in the table below. Some of the questions could not be answered due to paucity of data, or lack of information, these are indicated with 'Don't Know'. The table also highlights the difficulties of organisational layers and divisions where some areas of the organisation have different responses.

| *1.0* | *Has the organisation evidence to demonstrate that:* | *Train Operating Company* |
|---|---|---|
| 1.1 | Communications at all levels are founded on mutual trust? | No: lack of mutual trust, poor communications between levels. |
| 1.2 | All personnel understand, and agree with, corporate goals and the subordinate goals of their work group? | No: lack of understanding of corporate goals. |
| 1.3 | All personnel understand, and agree with, the means adopted to achieve corporate and work group goals? | No: disagreement with notion of privatisation, & hence with methods to attain organisation |

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| | | goals. |
| 1.4 | The work practices of the organisation are under continuous review to ensure timely responses to changes in the internal or external environment? | No: organisation firefighting to keep up with change in operating environment. |
| 1.5 | Managers and supervisors demonstrate care and concern for everyone affected by the business? | Difficult to assess, if so this is not the perception of the workforce. |
| 1.6 | Managers and supervisors take an interest in the personal, as well as the work, problems of their subordinates? | At a local level there is evidence of this. At higher levels - no, as even counselling is not confidential. |
| 1.7 | Managers and supervisors have been trained in leadership skills, and adopt a democratic and not an authoritarian leadership style? | A wide range of management styles with the organisation, from authoritarian to participative. |
| 1.8 | Workforce participation in decision-making is not confined to peripheral issues? | Little evidence of workforce participation, especially since systems are perceived as poorly formulated. |
| 1.9 | Job satisfaction is maintained by, for example, verbal praise from supervisors and peers, equitable systems of promotion, minimisation of lay-offs, and the maintenance of a clean and comfortable working environment? | Lack of interest professed by M.D. in job satisfaction, linked to continuing reorganisations. Inequitable promotion was a shortcoming frequently identified by the workforce. |
| 1.10 | The organisation expects the highest standards of competence and commitment of all its employees, but retribution and blame are not seen as the purpose of investigations when things go wrong? | Workforce perceive incident investigations as seeking blame. Management will allocate blame. |
| 1.11 | An appropriate distribution of young, and more experienced and socially stable employees, is maintained in the workforce ? | Don't know, but constant reorganisations and demanning. |
| 1.12 | The organisation only recruits high calibre trained personnel, but no automatic presumption is made that individuals are immediately competent to carry out the tasks assigned to them? | Railway has a system of training, and ensuring competence to fulfil safety critical tasks. |
| **2** | **Review of Safety Culture - employers** | |
| **2.1** | **Policy , Planning, Organisation and Communication** | |
| | ***Has the organisation evidence to demonstrate that:*** | |
| 2.1.1 | The Chief Executive takes a personal and informed interest in safety? | Yes (Managing Director). |
| 2.1.2 | The Chief Executive takes explicit and continuing steps to ensure that their interest in, and commitment to, safety is known to all personnel? | No, the commitment to safety fails to be effectively transmitted to organisation. |
| 2.1.3 | A positive commitment to safety is visible throughout the management chain? | No, from both perceptions, attendance at meetings and self-professed lack of interest by some managers. |

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| 2.1.4 | Safety is managed in a similar way to other aspects of the business, and is as much the responsibility of line management as any other function? | Moving towards this from a separate function to devolved safety responsibilities. |
| 2.1.5 | Safety practitioners have high professional status within the organisation with direct access to the Chief Executive? | Compliance and Standards functional manager is on the management executive. |
| 2.1.6 | Safety committees have high status in the organisation, operate proactively, and publicise their work throughout the organisation? | They exist but poor representation of managers and safety representatives at meetings. |
| 2.1.7 | Managers at all levels, and supervisors, spend time on the 'shop floor' discussing safety matters, and that steps are taken to ensure that all personnel hear of the visits and the matters discussed? | No - one of the main reasons for poor perception of management is lack of visibility. |
| 2.1.8 | Managers and supervisors spend time commending safe behaviour as well as expressing concern if safety procedures are not being observed? | Lack of contact by management. Supervisors do not perceive it as their role. |
| 2.1.9 | There are multiple channels for two-way communication on safety matters, including both formal and informal modes? | Communication systems ineffective. Rumours are effective in organisation. |
| 2.1.10 | Safety representatives play a valued part in promoting a positive safety culture, and in particular contribute to the development of open communications? | Safety representatives are resented by management, and have not contributed to open communications in most of organisation. |
| 2.1.11 | Specially-convened discussion/focus groups are established to consider the safety aspects of new projects? | Yes on certain issues, however they tend to be management participants. |
| 2.1.12 | Everyone in the organisation talks about safety as a natural part of every-day conversation? | At lower levels safety is part of day-to-day conversation. |
| 2.1.13 | Everyone in the organisation recognises the futility of mere *exhortation to think and act safely* as a means of promoting good safety performance? | At local levels they are aware, management less aware. |
| **2.2** | **Hazard Management** | |
| | ***Latent (decision) failures: has the organisation taken explicit steps to prevent and detect:*** | |
| 2.2.1 | Managers with responsibility for the development or implementation of safe operating procedures failing to: | |
| | (a) search for, and identify, all relevant hazards? | Use of external consultants to conduct HAZOPs. |
| | (b) assess risks accurately? | Certain topics use QRA, or qualitative methods. |
| | (c) select workable and effective control solutions? | Lack of consultation means controls not always appropriate. |
| | (d) adopt appropriate methods to monitor and review the adequacy of the procedures? | Tendency towards top down audits rather than devolved |

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| | | power, moving towards local responsibilities. |
| | (e) determine whether foreseeable active failures are likely to be the result of errors at the skills, or rules, or knowledge-based levels, or the result of violations? | Don't Know. |
| | (f) minimise or eliminate sources of conflict between production and safety? | Conflict implicit in organisational culture - emphasis on providing a train service. |
| | (g) ensure that all relevant personnel have had an opportunity to comment on the procedures before finalisation or implementation? | This does not occur within the organisation, and results in resentment when systems are implemented. |
| | (h) ensure that all personnel are adequately trained, instructed and motivated to follow safe operating procedures? | Personnel are trained, but procedures not always followed as inadequate, or insufficient, or personnel not motivated. |
| 2.2.2 | Managers *personally* committing violations of safety procedures or professional good practice? | Managing Director had an accident, and did not report. |
| | ***Active failures: has the organisation taken explicit steps to prevent and detect:*** | |
| 2.2.3 | Personnel failing (as a consequence of errors and/or violations) to: | |
| | (a) search for and identify all relevant hazards? | Reporting systems in place, deterioration in compliance. |
| | (b) Match their perception of risks to the actual risk magnitudes? | The workforce are strongly aware of the various risks and their consequences. |
| | (c) accept personal responsibility for action? | Reluctance to accept responsibility for actions e.g. Refusal to sign SRSs. |
| | (d) follow systems of work where specified, or otherwise adopt a safe method of work? | Yes, unless they perceive the system as unimportant for safety. |
| | (e) continuously monitor and review the magnitude of risks to which they are exposed, and the effectiveness of the steps taken to keep the dangers under control? | Don't Know. |
| | ***Do the organisation's plans for preventing and detecting latent and active failures take explicit account of the following:*** | |
| 2.2.4 | Managers, supervisors, and other personnel may underestimate the magnitude of risks: | |
| | (a) with no catastrophic potential (e.g., when dealing mainly with major hazards)? | No, mainly because minor accidents to passengers can have financial consequences (but for staff it is less clear-cut). |
| | (b) where the consequences are delayed (e.g., a long latent period between exposure and harm)? | Don't Know. |

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| | (c) affecting strangers, compared with risks to the immediate work group? | Yes, customer safety very important to organisation. |
| | (d) where perceptions may not be adjusted sufficiently in the face of new information? | Don't Know. |
| | (e) where snap judgements are made on the basis of extrapolated information about other risks? | Don't Know. |
| 2.2.5 | Managers, supervisors, and other personnel may overestimate their ability to assess and control risks: | |
| | (a) that have been encountered for long periods without apparent adverse affect? | Don't Know. |
| | (b) where the risk presents opportunities for ego enhancement (e.g., public displays of daring (machismo image); managers seeking to portray decisiveness)? | A Degree of macho culture, no evidence of efforts to prevent this. |
| | (c) where substantial benefits accrue? | Don't Know. |
| | (d) when the assessment is made by a volunteer? | Don't Know. |
| 2.2.6 | Managers, supervisors, and other personnel may have an impaired ability to cope with risks: | |
| | (a) when affected by life-event stressors (e.g., bereavement, divorce)? | Some areas of organisation try to deal with e.g. train crew, not others. |
| | (b) when under stress as a result of a lack of confidence in the efficacy of prevention plans? | Don't Know. |
| | (c) when they believe that they have no power to influence their own destiny or that of others (fatalism)? | To a certain extent when dealing with Railtrack, and issues where company has no power to resolve. |
| | ***Has the organisation adopted the following measures for improving peoples' perceptions of risks, and/or ability and commitment to control risks?*** | |
| 2.2.7 | A scheme to identify managers, supervisors and other personnel who may: | |
| | (a) be subject to life-event stressors? | In train crew depots have this scheme. |
| | (b) lack confidence in the effectiveness of prevention programmes? | Widespread disillusionment with systems, but no system to detect. |
| | (c) harbour resentment or distrust of the organisation? | No system to detect this, and it seems fairly commonplace within organisation. |
| | (d) be disposed to ego-enhancing behaviour? | Don't Know. |
| | (e) have an 'adventurous' outlook on risks? | Don't Know. |

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| 2.2.8 | Steps to increase individual belief in their own ability to control events? | No, as workforce feel not consulted and no role in events. |
| 2.2.9 | Steps to erode the social cachet of risk taking? | No culture of risk taking, workforce risk assess. |
| 2.2.10 | Discussion groups to talk through individual perceptions of risks and preventive measures? | Don't Know. |
| 2.2.11 | Safety training founded on: | |
| | (a) an understanding of the likely distortions of peoples' perceptions of risk magnitudes and preventive measures? | Don't Know - mixed throughout organisation depending on role and responsibilities. |
| | (b) the need for refresher training to counter peoples' changes in perceptions over time? | " |
| | (c) feedback of accident/near miss data? | Through safety briefings, but not much specific to individuals |
| | (d) explanations of not just *how* a job must be done, but *why* it must be done that way? | Sometimes through safety briefings, but not effectively. |
| | (e) the need for team building? | " |
| **2.3** | **Monitoring and Review** | |
| 2.3.1 | Has the organisation taken explicit steps to determine whether its corporate goals match the goals of the local community and society at large? | Not relevant for Railway Industry. |
| 2.3.2 | Is the Board seen to receive regular safety reports, to review safety performance periodically, and to publicise the action it has taken? | Yes. |
| 2.3.3 | Has the organisation: | |
| | (a) a plan to review, and where necessary, improve its safety culture? | No. |
| | (b) devised methods for selecting, quantifying and measuring (auditing) key indicators of safety culture? | No. |
| | (c) reviewed, and where necessary changed, its organisational structure to make manifest its commitment to safety? | No. |
| | (d) taken steps to ensure safety decisions are acted upon without delay? | Don't Know - mixed some have, others not. |
| 2.3.4 | Have members of the organisation been trained to: | |
| | (a) carry out a review of safety culture? | No. |
| | (d) devise and validate key indicators of safety culture? | No. |
| | (c) prioritise safety culture goals arising from a review? | No. |

| | | |
|---|---|---|
| | (d) draw up an action plan to improve the safety culture of the organisation in priority areas? | No. |
| | (e) monitor the implementation and effectiveness of plans to improve the safety culture? | No. |
| 2.3.5 | Has the organisation made arrangements to elicit the views of all personnel about: | |
| | (a) the overall organisational culture? | Yes - current research. |
| | (b) the safety culture of the organisation? | Yes - current research. |
| | (c) their perceptions of the attitudes of others in the organisation about safety? | Yes - current research. |
| | (d) their perceptions of risk? | No. |
| | (e) their perceptions of the effectiveness of preventive measures? | Yes - current research. |
| | (f) themselves (self-assessment)? | No. |
| 2.3.6 | Has the organisation introduced incident investigation procedures which take full account of: | |
| | (a) multi-causality? | Yes. |
| | (b) the need to explore the incidence of latent as well as active failures? | Yes. |
| | (c) the need to continue the investigation, even when an apparent cause has been found, to determine further causal factors? | No. |
| | (d) the importance of not seeking to apportion blame? | Yes. |

*Table Thirty-one: ACSNI Analysis*

Table thirty-one shows that the organisation fails primarily on the organisational culture component of the checklist. A mismatch between the levels of the organisation reveal some areas with developed systems and controls whilst other areas have not. The principle finding from the ACSNI checklist is the fact that the organisational culture is deficient, especially concerning communications and working towards organisational goals. From the above checklist areas for improvement can be identified, and the fundamental importance of communicating safety information highlighted. The above checklist provides a clear indication of safety culture failure mechanisms, and how these are crucially linked to communications, and the checklist provided a useful gauge of the key safety culture characteristics. The next chapter places the research findings into context with reference to the academic literature.

# CHAPTER ELEVEN

## *Implications of research literature*

> The difficulties they encounter in acquiring their principalities arise partly because of the new institutions and laws they are forced to introduce in founding the state and making themselves secure. It should be borne in mind that there is nothing more difficult to handle, more doubtful of success, and more dangerous to carry through than initiating changes in a state's constitution. The innovator makes enemies of all those who prospered under the old order, and only lukewarm support is forthcoming from those who would prosper under the new. Their support is lukewarm partly from fear of their adversaries who have the existing law on their side and partly because men are generally incredulous, never really trusting new things unless they have tested them by experience.
>
> Niccolo Machiavelli, The Prince.

These words from Niccolo Machiavelli's The Prince are used to start this discussion chapter, and highlight the challenges an organisation faces when implementing new systems in a changing environment. The lack of cooperation and workforce involvement identified in this study is consistent with the above quotation. This chapter aims to put the research findings into the context of the academic safety culture and organisational communications literature, and then to integrate these findings in an organisational learning framework. Methods for expediting organisational change concludes the chapter. The final discussion chapter then provides a discussion of the wider implications of the research.

## 11.1 COMMUNICATIONS

As has been elaborated (Chapter 8) and discussed (Chapter 10) communications within the organisation fail. The reasons for this are many and were elaborated in the previous chapter. This chapter links these findings to the academic literature and develops an organisational learning framework as the context for the results.

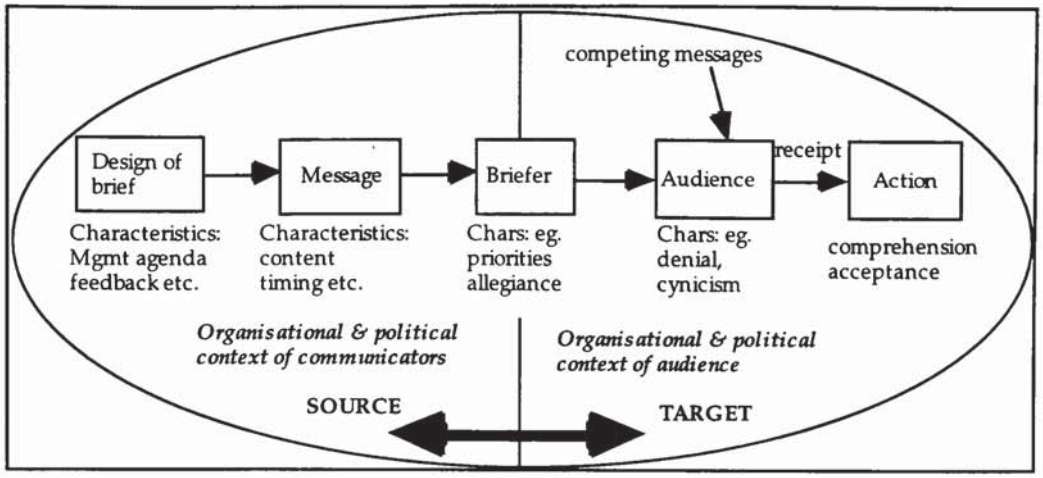


*Figure Six: Communication Process*

Figure Six shows a diagram adapted from Penning-Rowsell & Handmer (1990) which models communication as a process, with the sequence starting at the design of brief stage and resulting in action. This is used as a basis for discussing the findings concerning the communication process, and will start with the organisational and political context of the communicators.

### 11.1.1 Organisational and political context of communicators

Within the company communications were recognised as weak, so management appointed a Communications Manager, and developed and incorporated a communications process. They also initiated internal audit systems to ensure the process was effective. The research described in this thesis demonstrates management's aims, as the research was conducted to consider the effectiveness of communications in achieving an effective safety culture. The organisation can be said to have acted proactively and has taken a number of steps towards the improvement of communications within the organisation. This was a rational step for the organisation to take motivated by both external and internal pressures. External pressures included Railtrack and the British Railways Board, who both conduct safety audits which investigate communications. A further external pressure was the legally-binding safety case which specified the steps the organisation used to control risks in their organisation. Specified within the safety case was the cascade briefing process, and both internal and external communication systems.

Motivations to communicate were also internally driven with a desire by management to get organisational commitment to management's vision for the future, which was encompassed in their mission statement. Fundamentally this required an enormous change in the workforce's ethos, so the communication process was developed in part to achieve this change. The importance of communications has been emphasised by

many authors from a diversity of disciplines (e.g. Peters & Waterman, 1982; Weick, 1991; HSC, 1993). The strategy selected was a formal cascade process, which involved the transmission of information down the hierarchy from top management to the shop floor (also specified within Railtrack's safety case as a system with which to comply). The philosophy underlying was that the process could be used for consistent messages to be transmitted through the hierarchy from top management to the shop floor to serve a number of management aims. This is consistent with Kanki & Palmer (1993) who state that the key function of communication is as a management tool, and it is therefore used as a source of power within the organisation (e.g. Shukla, 1982; Spekman, 1979).

The political context of the organisation is one of enormous change and the move from a large monolithic nationalised structure into private ownership. Management of the organisation, for internal control reasons, were supportive of the move towards privatisation, in stark contrast to the workforce, who do not support privatisation.

### 11.1.2 Organisational and political context of audience

The audience as referred in Figure 6 is all levels of the organisation, bar executive level management (the communicators). However in reality the audience of the message are middle managers downwards as they have not been involved in the design of the brief. As a consequence within this framework the audience is the workforce, their supervisors and their line management. Above this level the group breaks up and allegiances separate. This is consistent with Lee (1995) who stated that referring to a single audience within an organisation is crude, as organisations are composed of many subgroups of great diversity.

For this level perceptions of management, the message and its source crucially affect the receptiveness of the audience in receiving the message. These issues will be examined in greater detail in the organisational culture section of this chapter.

### 11.1.3 Design of Brief

The brief was compiled by management, and therefore communications tended to be one way. This deviates from all recommendations concerning organisational communications. Effective communications should be two-way and open (e.g. HSC, 1993; Reilly & DiAngelo, 1990), and consequently the design committee should have workforce involvement, feedback pathways and mechanisms to incorporate feedback when developing each briefing pack. This brief is designed by a management committee and results in a brief which is:

1. geared at a single audience (Lee, 1995), as only one briefing pack is prepared which is not designed for different groups;

2. aimed at the workforce, but its composition does not deal with cultural differences. So the brief does not attempt to overcome disparate language categories and assumption sets which is necessary for effective communications (Fiske & Taylor, 1991);

3. designed to attain commitment to the organisation's mission. However members of the organisation, as West & Anderson (1992) also found, are sceptical as they see espoused values in communications, what people say they want based on intellectual backgrounds and commitments, rather than what management want in reality. So they do not perceive management commitment behind their statements;

4. failing to treat people as intelligent human beings (e.g. the use of 'management speak' and jargon, patronising in tone). Hendrick (1992) found that this prevented effective communications.

The message was designed at least in part to gain commitment by the organisation to its mission statement and the future. Management kept this intent covert and the message was not successful. Greenberg & Miller (1961) found that openly positive messages were more successful than covert messages in achieving cooperation. It can be assumed that this finding is linked to the issue of trust, honesty and integrity within the organisations. The organisation may find the briefing packs succeed if the messages were less manipulative. A further difficulty with excluding the workforce from the design of the brief is that the message will not be specifically designed for its audience. So messages are developed which are on the whole meaningless. The importance of understanding the organisational culture and the need for consistent meanings was stated by Dansereau et al (1987) and by Reilly & DiAngelo (1990) as essential for the communication process to be effective.

### 11.1.4 Message

The message developed by the briefing team was formulated by management using management's vocabulary and management's agenda. This was reflected in the content of the briefs, and it is proposed that because the information was developed by management, that the communication is asyntonic (asyntonic is used as the antonym of syntonic which is "a system of wireless telegraphy in which the transmitting and receiving instruments are accurately tuned so that the latter responds only to vibrations

of frequency emitted by the former" (Oxford English Dictionary, Burchfield, 1986)). So asyntonic transmission would evoke no response from the receiver and hence there would be no communication. Anthony (1994) states that in the case of organisational communication, management understands the message it is sending and intends it, not only to be understood by the receivers, but to affect their belief systems, their values and the meaning they ascribe to language. However the totality of the message, totally unheard, leaves management totally isolated. Anthony (1994) states "the transmitter is not merely saying "pass the mustard" and getting no mustard: the transmitter is isolated in a private system of uncommunicated meanings and is asyntonically incapable of receiving corrective responses from the intended audience". The main reason for asyntonic communications in this organisation is due to the lack of workforce involvement which results in a brief which fails to be understood.

Romano (1984) specified the characteristics of successful briefing messages, they should cover:

- PROGRESS — how the organisation is doing;
- PEOPLE — who is coming and going;
- POLICY — any changes in policy which affect the organisation;
- POINTS — things requiring further action.

It is also recommended that briefs should be thirty minutes or less in length. The organisation studied do not follow these guidelines, as their messages were rarely targeted, and commonly were over an hour in length. Hence message failure is expected, as the message contravenes recommendations for successful communications.

One of the key difficulties with the message not targeting the audience relates to idleness, where message recipients do not bother processing the information deeply, as they think they know what it means. Hence the culture of the audience and the history of the cascade brief affects the communication process.

### 11.1.5 Briefer

Academic literature relating to the briefer are consistent with the research findings and explain why in some areas of the organisation the briefs succeed, whilst in others they fail. These relate to the concepts of:

- CO-ORIENTATION:
  Communications were more successful where the briefer identified common ground between himself and the audience (Weiss, 1960);

- POWER:
  where the briefer has control over rewards and punishment then the audience will pay attention (e.g. Shukla, 1982). However the problem with this is that it could lead to resentment within the organisation (Lee, 1995);

- RESPECT:
  a message from someone known to be capable and knowledgeable, will be more effective than one from a neutral or ineffective source (e.g. Carroll & Perin, 1995).

These were found in varying degrees to have an influence on the efficacy of the briefer as perceived by the audience or as seen by the researcher. However many of the briefers were 'out-of the-loop' in terms of deciding the content of the briefs and as a consequence had no commitment to the process, which explains the lack of compliance with the system. This failure is down to lack of involvement in organisational decision-making, and is destructive to the organisation. It is typified throughout the organisation in a failure to transmit feedback about the quality of communications and the briefing process. This lack of involvement is typical within organisations as Simon (1945) initially identified, which was supported by, for example, Fulk & Mani (1985).

### 11.1.6 Audience

The main research findings concerning the audience was their lack of trust in organisational management which resulted in the failure of the message to be actively received. This parallels findings by Petty & Cacioppo (1986) and Chaiken (1987) who state that individuals do not process messages unless motivated to do so. This lack of motivation is linked to a lack of trust in the message source, a failure by the organisation to transmit good news and the information being perceived as unimportant. These characteristics were present within the organisation and are consistent with other organisational communications findings (e.g. Maheswaran & Chaiken, 1991).

It is also proposed that because of widespread cynicism and a lack of motivation by the briefer, that the audience may not have an opportunity to express interest in the brief.

### 11.1.7 Action

The communication process fails in some areas of the organisation. Action refers to attaining a response to the communication process and depending on the communication affects the action required. Some areas of the organisation were successful and it would seem that these were where the message altered to its target audience and the entire brief designed to appeal to them. Lee (1995) states that for messages to succeed and get action requires briefs to be self-referencing, and for the audience to associate the message with their own experiences. Also if individuals are given responsibility, some degree of control and feel committed to what is being discussed then a message is more likely to succeed. Succeed is the phrase used to refer to a communication being successful and achieving action.

### 11.1.8 Summary of Communications

Overall communications within the organisation fail and is validated by previous research findings as elaborated above. Brown and Yule (1983) stated that successful communication depends on both sender's and receiver's perceptions, and that the cultural systems of roles affects communication. As a consequence of the organisation failing to communicate effectively there is a lack of commitment to organisational mission, rumours continue, morale continues to deteriorate and there is a lack of backing for implemented safety systems. Communications are identified as a key problem within many organisations, as Carroll and Perin (1995) state "'poor communication' is cited time and again for every kind of organisational and operational problem." This was verified by Weir (1991) who states that failures in communication systems contribute to virtually every catastrophe, but that such failures are sufficiently widespread in organisations to be regarded as normal, "for most managerial systems operate in a degraded mode". Turner (1994) defines this as 'sloppy management' where management "have a blinkered unrealistic view of the organisation, its operations, its environment and its vulnerabilities, and use their authority to reinforce this closed view of the world". Hence it seems that communication failures are widespread and common-place and are probably difficult to eliminate. Systems should be designed to compensate for these weaknesses.

Communications, are therefore critical within organisations but few organisations appear to have fully effective communication processes. Although communications fail within the organisation studied, the study did identify areas of best practice within the organisation and showed some areas of the organisation where the communication process succeeded. Fundamentally the successful areas had identified their own problems, created solutions through an understanding of the various challenges and

implemented these solutions. This highlights the importance of problem-solving within the organisation at a devolved level. The process undergone matches that proposed by organisational learning theorists (e.g. Senge, 1990; Carroll & Perin, 1995). The learning was not complete however as the learning only occurred in isolated groups within the organisation, and there was no transmission of solutions throughout the organisation. There was also a predisposition by the organisation to conduct single loop learning - that is specific problems were solved, rather than questioning the underlying aims and policies of the process which would achieve double loop learning.

## 11.2 CULTURE: SAFETY AND ORGANISATIONAL

This discussion is based on research findings from interviews conducted with respondents at two separate time periods. The purpose of this section is to link the research findings; key findings will be summarised at the start of each topic, with previous research.

### 11.2.1 Safety

Topics identified under this category are safety responsibilities, quality of safety, management of safety, cutting corners, accidents and vulnerabilities.

#### *11.2 .1.1 Safety Responsibilities*

Key Findings:

- All participants have an awareness of safety responsibilities;
- Management are proactive and aware of their responsibilities for staff;
- Responsibilities are linked to their role when performing their job;
- No change in responses between the two studies.

This shows that individuals within the organisation are aware of their individual responsibilities towards safety, and link these to their day-to-day tasks. This is consistent with recommendations from the IAEA (1991) who state that a key indicator of safety culture is an individual being able to state their responsibilities. However the findings suggest that the behaviours are rule-based as workers serve functional goals (e.g. running trains on time) which is not always achievable under the procedural constraints of the organisation. Within the workforce there was a reluctance for individuals to sign Safety Responsibility Statements, which detailed individual's safety

tasks. Despite being aware of their individual responsibilities, the workforce were reluctant to be held accountable for them. This is consistent with the findings of Guest, Peccei & Thomas (1994) who investigated safety attitudes in permanent way workers within British Rail. They found that there was a reluctance at lower levels of the organisation to accept personal responsibility, and that their priority was maintaining the train timetable.

### *11.2 .1.2 Quality of Safety*

Key Findings

- Mixed perceptions of the quality of safety;
- Perceptions deteriorated between the two studies;
- Dissatisfaction with the quality of safety was linked to bureaucratic systems, delays in resolving safety issues and violence from customers.

The key finding here is the tendency to externalise the problems identified with the safety systems; that is participants' blame others for safety failings. This is supported by research by Niskanen (1994) who found that people attribute success to internal causes (e.g. personal skills and insight) but attribute failure to external causes (e.g. not enough instructions). It is proposed that perceptions of the quality have deteriorated because the safety management system and other operational changes have increased individual exposure to these systems. This would seem to have caused resentment in the organisation as a result of lack of involvement in the design and implementation of these systems. As Horbury (1994) identified consultation and participation are essential for the successful implementation of safety systems. Without this consultation and participation, perceptions of the quality of safety will deteriorate. The workforce also believe the safety systems are unnecessary for their jobs, and believe that management, through focusing on systems, overlook important safety problems.

### *11.2 .1.3 Management of safety*

Key Findings

- No Change in perceptions;
- Rulebook and Health and Safety Walkabouts are the main items identified;

- Safety management systems are perceived as unsatisfactory because:
  - lack of consultation in system development;
  - restrictive systems;
  - overly bureaucratic systems.

The initial point for consideration is that there is no change in perceptions despite eight months briefing the purpose of the safety management systems. At an individual level the management of safety was considered as external to management systems in that the rulebook, and health and safety walkabouts are cited as fundamental. These are driven by systems external to the organisation, and have been integral to the safe operation of the railways for many years. The organisation failed to feed back their perceptions about the adequacy of the safety management systems and continued to resent them, which was exacerbated as some systems were devised by external consultants. These findings about the management of safety, suggest a violation of the ACSNI (HSC, 1993) checklist concerning the development and implementation of safe operating procedures, where consultation about procedures and motivation to follow them are considered essential for an effective safety culture. However management's actions are rational in that the timescales for developing and implementing the systems were very short, and that consultation was not always possible.

### *11.2 .1.4 Cutting Corners*

Key Points

- Study One found widespread acknowledgement of individual cutting corners; and by Study Two management were implicated in cutting corners;

- Some instances of cutting corners could jeopardise safety.

Corner cutting, in the form of rule violations is usually displayed in organisations without positive safety cultures (HSC, 1993). The Train Operating Company has an organisational culture where cutting corners is common place, and without which many believe that trains would not run. By Study Two, management had been implicated by both the workforce and themselves in cutting corners. This would appear to be linked to the fact that a number of decisions had been taken which were perceived by the workforce as jeopardising personal safety, by either emphasising business pressures or personal rule violations. Glendon (1994) noted this also, commenting that "behaviour is determined by outcomes rather than official policy", so management commitment is required in the form of actions for the workforce to comply with safe procedures. This

is allied to the difficulties with communication as the workforce are cynical and believe management are not supportive of their actions. A number cited examples of cutting corners which would jeopardise safety, however the workforce rationalised their actions, believing the rules they violated were unimportant and did not jeopardise safety.

The justification for cutting corners was stated as getting the job done and management pressures. Clarke (1993) found that railway workers were unconvinced by safety briefings which stated that rules should be strictly adhered to, and that if this resulted in delays they would have management support. The production/ safety conflict has frequently been identified as a conflict for safety culture, although the focus has usually been on management decision-makers (e.g. CBI, 1990; Pardy, 1991; Ross, 1991). This research highlights the role of the conflict for the workforce, but this may be unique to the railway culture which is predicated upon the provision of a train service. As stated earlier the railway culture and its members believe they provide a service, and the conflict they perceive is between running a train service and obeying the rules. Elling (1991) studied Dutch railway workers and found that 95% thought that work could not be finished on time if rules were followed. So institutionalised corner cutting may be an industry characteristic. It is speculated that management's motives for cutting corners are financial and that the balance between safety has been skewed towards an emphasis on income. This is consistent with previous research which identified that managers are on the whole employed to increase profitability (Child, 1988).

### *11.2 .1.5 Accidents*

Key Findings

- Accidents are rare events and not perceived as operational reality;
- Only emerged as a category in Study One;
- Linked to the concept of blame;
- Luck identified as key reason for rarity of accidents;
- Linked to human error, rather than systems at a management level.

It appears as though the workforce have a persecution complex, and believe they will be blamed should an incident occur. However, since management attribute accident causes to human error, the workforce's perception would appear to be justified. Blame is a key feature of the railway's safety culture, and traditionally was perceived as just

and fairly allocated (Rayner, 1993). However with the multi-company environment, blame has become an operational reality. It is speculated that the fear of blame will create a climate where learning will not occur. Pidgeon (1993) identified this as a dilemma, as blame is essential to discourage people from behaving unsafely, but blame can also hinder incident investigations.

Luck is an interesting finding in the research, as it shows that the workforce do not perceive themselves as protected from accidents by the safety management system, but perceive it as luck. This is consistent with a feature of High Reliability Organisations identified by Rochlin (1993) which he defined thus:

> "When ordinary organisations accept a period of calm as a sign of success and a benign environment, the personnel of the organisation we studied remain deeply suspicious that the environment is malign and tricky and that at best they are having a stretch of good fortune."

So attributions of safety to luck could be a positive thing, however further research to investigate whether in this instance it was a positive effect or whether it was 'learned helplessness' is required (i.e. that only luck protects them from harm, not organisational reactions).

### *11.2 .1.6 Vulnerabilities*

Key Findings

- No clear change in perceptions;
- Delays in resolving safety issues;
- Lack of consultation about safety systems;
- Conflict between business and safety.

There is a tendency towards externalising causes of problems in the organisation, with both management and external organisations blamed. So management are blamed for non-resolution of safety issues rather than accepting responsibility for safety and feeding back problems at a personal level. A dialogue about safety and safety problems is necessary for a learning organisation, but it requires a shared language and a willingness to tackle topics which generate embarrassment and anxiety (Argyris & Schon, 1978, 1996; Schein, 1985). This organisation did not show this characteristic. However as Argyris (1994) demonstrated, this is common to most organisations.

### *11.2 .1.8 Attitude survey*

This aspect of the research found positive attitudes towards safety, which contradicts the findings from the interviews. It is speculated that this disparity is linked to the belief that safety is good at an individual level, with people being safety aware and knowing their safety responsibilities, and safety, fire and emergency procedures being considered necessary. At an individual's workplace participants are happy with safety. However they can see how safety is changing, and will continue to change as the organisation moves towards privatisation and they believe that these changes will have an adverse effect on system safety.

## 11.2.2 Incidents

### *11.2.2.1 Incident Reporting*

Key Points

- Full range of compliance with reporting systems (from zero compliance to full);
- Decision strategies used to decide what to report;
- For hazard reporting:
  - deteriorated, were initially proactive but stopped reporting by Study Two;
  - delays and lack of action cited as reason for not reporting;
  - disillusionment with systems.

Reporting of incidents was seen as a duty, and there was a tendency to report only if they have to, or if they get caught, or if it could affect someone else. Hence the purpose of reporting is not contributing to the safety culture and is not viewed as a method for improving system safety. Overall this is detrimental to the safety culture of the organisation as defined by HSC (1993) and IAEA (1991). Hazard reporting deteriorated between Studies One and Two. It is speculated that this is linked to a conflict with Railtrack and the steady build-up of unresolved safety items. This is consistent with Clarke (1993) who found that managers taking no notice of incident reports was a significant predictor of railway workers failing to report. The company were aware of the perception that Railtrack were not resolving safety items and that their workforce perceived this as management failure, and a letter was leaked by the company to the Evening Standard which printed a letter from the Managing Director telling Railtrack to resolve safety issues immediately.

#### *11.2.2.2 Compliance*

Key Findings

- Management believe workforce comply with reporting systems;
- Workforce fail to comply with reporting systems as:
  - nothing gets done
  - time-consuming
  - custom and practice
- Perception that only customer problems get dealt with.

Overall there appears to be non-compliance with the systems. Guest et al (1994) found that if management do not appear to endorse rule enforcement with visible action, this will lead to continued violation. According to organisational myth the Managing Director had an accident and did not report it, and hence reporting systems were not perceived as important within the organisation. The reasons stated for non-compliance are consistent with Clarke's findings (1993).

#### *11.2.2.3 Management action*

Key Findings

- No action perceived by workforce, and leads to scepticism about management;
- Participants perceive reporting forms as more important than the event.

Overall there was dissatisfaction with management action, and participants were sceptical and not satisfied. The workforce see things not being done and this is linked to organisational change and privatisation. HSC (1993) state that humanistic management styles which resolve work problems quickly produce better safety cultures.

### 11.2.3 Compliance and Standards

Compliance and Standards is the function responsible for developing safety systems. A recent task was the development of the Safety Case. The intent of investigating perceptions of this function was to gauge understanding of safety systems and perceptions of the function responsible for their development.

### *11.2.3.1 Who they are*

Key Findings

- Perceived as a Hotel and Leisure group;
- No change between Study One and Study Two;
- Misunderstanding by most participants of who they are, mistaken for other functions.

There is overall disregard and disrespect for Compliance and Standards among participants. The organisation confuses the Compliance and Standards with the department who resolve safety issues (e.g. repairs), as opposed to Compliance and Standards who devise safety standards. When comments about safety systems are considered it is not surprising that the function is viewed poorly, as the reasons attributed for failure, and relate to a lack of expertise and a failure to consult. The problem with this is that the systems developed are the "vision of creators, rather then reality" (Clarke & McHale, 1995), and numerous examples were cited by the workforce which highlighted this within the organisation.

For safety systems to be effective HSC (1993) and IAEA (1991) state that system users should be consulted and be involved in the development of systems. This is necessary for an effective safety culture, but it is also important, as ergonomists emphasise, for well-designed and effective work systems (Wilson & Corlett, 1990).

### *11.2.3.2 What they do*

Key Findings

- Workforce negative or unaware of function's role;
- Management attitude improved by Study Two.

Overall perceptions about Compliance and Standards focused on what the function failed to do, rather what it actually did. Management's improved attitude seems to be linked to the communication of the Safety Case and the raised profile of the function.

#### *11.2.3.3 How they do it*

Key Functions

- Perception that Compliance and Standards:
  - fail to consult;
  - are out of touch;
  - develop systems which are overly bureaucratic for operating requirements.

- Participants are very negative in their perceptions.

There is widespread perception that systems are inadequate, but few individuals attempt to change these. The participants state that Compliance and Standards fail to consult but the workforce fail to feed back perceptions to Compliance and Standards. The findings show an organisation not learning, with no participants attempting to feed back or change the systems. A number of instances were identified where participants deliberately failed to give useful information to Compliance and Standards. The information could solve certain problems but a decision was made not to tell them, and they, "cut off their nose to spite their face". These were deliberate violations, motivated by a dislike of Compliance and Standards. This shows that despite top level commitment to safety, as evidenced by the high profile of Compliance and Standards and its head being a member of the executive team, that this is insufficient for the organisation's safety culture to improve. This is an unexpected result and contradicts most interpretations of safety culture (e.g. HSC, 1993) as it suggests that in spite of management commitment to safety, systems are disregarded. An alternate explanation would be that management commitment is not communicated.

### 11.2.4 Management

#### *11.2.4.1 Executive Management*

Key Findings

- the Commercial function like the Managing Director, but not his Executive Committee. This perception is less positive at Study Two;

- the Production function do not like any of the executive management because of the lack of contact, organisational chaos and management

responsibility for this. There is no difference in responses between the two studies in these groups.

The production function traditionally have a strong organisational culture, which is militaristic and links management to their decisions, and blame management for organisational failings. The commercial organisation seem to have greater contact with management than production, and their disregard for the executive appears to stem from a belief that the Managing Director is good and that the organisation fails because the Managing Director is unaware of their problems. The production function blaming management is consistent with the view of Carroll & Perin (1995) who believe blaming management is just another way of individualising error, and overlooks the fact that everyone acts rationally within their bounds. The lack of contact means that there is no understanding between management and the workforce and the different challenges are not understood.

### *11.2.4.2 Senior Management*

Key Findings

- Workforce view management as isolated and top heavy;
- Senior management are not respected;
- Study Two revealed that the new commercial manager had increased the emphasis on budget and communications.

Overall management were not well perceived by the workforce, and this was linked to downsizing at the sharp end, and a perception that there were too many managers. Associated is the perception that since management are not visible, they are 'up to no good'. At this point it is important to emphasise the words of Thompson & Wildavsky (1986) who state "if leadership is a function of organisational culture, it follows that the efficacy of styles of management depend not only on the skills of leaders but on the cultural context within which they work." This would suggest that the reasons for management failing is in part linked to the organisational culture, which perceives them as ineffective. So they can not effectively operate within the system due to the organisational culture.

### *11.2.4.3 Local Management*

Key Findings

- Local management are viewed positively;

- Shortcomings in local management are attributed to higher management.

These findings indicate a satisfaction by participants with their immediate management. It is presumed this is due to the converse of the reasons why they didn't like higher management, such as greater contact, feedback of information, and resolution of safety problems. So contact and trust appear as key issues affecting perceptions of management. This is consistent with the findings from the attitude survey component where a question on management scored positively (it is assumed that the question responses refer to local management), as senior management are not trusted and are seen as lacking direction (different questions). This is consistent with Bate (1990) who found that railway managers "lack identity, purpose and shared core values at the top, and show a failure to make decisions."

## 11.2.5 Communications

### *11.2.5.1 Quality*

Key Findings

- Communications perceived as ineffective;
- No change in perceptions between the two studies;
- Perceived as one way, as opposed to two-way.

Communications were not perceived as effective, which is consistent with the objective findings of the research which were discussed earlier.

### *11.2.5.2 Topics*

Key Findings

- Mixed perceptions of communication topics;
- Mainly negative, but state that if the content was better then the briefs would be more successful;
- workforce dismissive of brief's content and management motives.

The content of briefs was perceived as inappropriate for the organisation. Rohrmann (1992) stated that for effective communication flow need "correctness, completeness and comprehensibility", and for the message to "stimulate attention, and meet the information needs of the receiver" and be rated as "personally relevant, believable and

not frightening." As was discussed earlier organisational communications do not meet these criteria.

### *11.2.5.3 Success*

Key Findings

- No overall pattern of results;
- Contribution of local level management critical for briefing success.

It appears that most participants interviewed are satisfied with local level management, that when briefs succeed it is linked to lower management and the relationship of trust. This is consistent with research by Rohrmann (1992) and Niskanen (1994).

### *11.2.5.4 Failure*

Key Findings

- Useless/irrelevant information;
- Audience cynical;
- Management are dishonest;
- Logistical problems.

Many problems were identified by participants, but these were neither resolved or fed back up the hierarchy for resolution. Hence the organisation is failing to communicate its problems up the hierarchy, and communications remain one-way. Some areas of the organisation had devised strategies to resolve the logistical difficulties of cascade briefing, however these were not communicated up the hierarchy or laterally. There is a tendency to believe in the omnipotence of management and not to resolve organisational difficulties at lower levels.

### *11.2.5.5 Opinions*

Key Findings

- Morale low at Study One, less pronounced at Study Two;
- Information not timely;

- Disappointed that Retail Bulletin ceased publication.

Overall opinions of communication link low morale with poor communication, and that management decisions have had a detrimental affect on morale. It can be seen that there is a tendency to blame the system, whilst management blame individual personality clashes and power struggles for communication failure. It is speculated that morale has improved because the future of the organisation is a little more certain. When Study One was conducted the future of the railways and privatisation was uncertain and prone to political pressures, but when Study Two was carried out Railtrack had been privatised and a number of Train Operators franchised. Implicit within definitions of communications is the notion of successful communication decreasing uncertainty, increasing levels of knowledge and give the capacity to act and understand. Hence communication within the organisation does not occur.

The findings of communications match those from the attitude survey which show a rumour driven organisation, with poor official communication, and dissatisfaction with senior management. This highlights the contrast between attitude surveys and interview findings, the attitude survey provides an indication of attitudes whilst the interviews identify underlying causes and hence assist operational recommendations.

## 11.3 ORGANISATIONAL LEARNING

This section develops a case study of how the organisation fails to learn effectively and its effect on the success of communications and safety culture. The history of British Rail is of 'fixing' rather than 'learning' as evidenced by the many change strategies and responses to industry accidents (e.g. Bate, 1990). The results of this research are displayed with reference to system diagrams and examples of inappropriate fixes by the organisation, and how the organisation continues to operate ineffectively. Carroll (1995) used the framework devised by Senge (1990) to show the implications of 'fixes that fail' within the international nuclear industry. He states that within the nuclear industry the emphasis is on identifying solutions, but that these solutions overlook interdependencies. This is certainly the case within the rail industry where discrete solutions are identified and operationalised, and interdependencies overlooked. The implications of this are quite serious in the new railway environment where seeking solutions in single companies could overlook the tightly coupled environment.

### 11.3.1 The Train Operating Company's Mission

Company management formulated their mission statement. They:

> " will be an economically successful business now and in the future by providing the right levels of customer satisfaction."

This statement encapsulated what the organisation should achieve, and implicit within this statement is a committed workforce and for the statement to be translated into actions to achieve its final intent (i.e. an economically successful business).

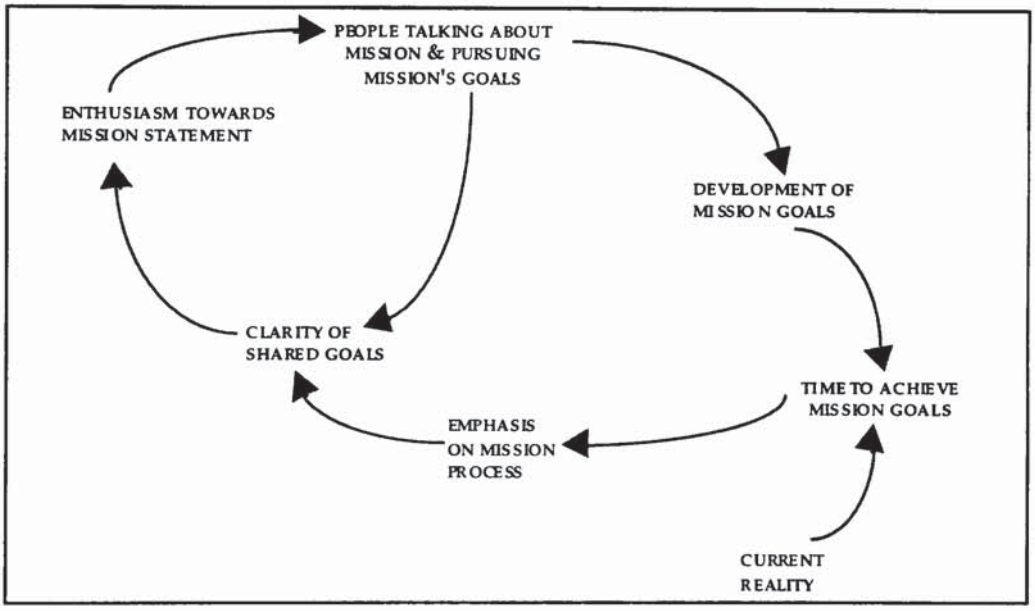


*Figure Seven: Organisational Mission - Management Intent*

From Figure seven it can be seen that management wanted the mission statement to be accepted within the organisation and for the organisation to match the loop in the top left hand corner, where the mission is accepted and acted upon within the organisation. This is achieved through the other loop which involves development of mission goals, time to achieve these goals, through comparison with organisational reality, and the focus of the organisation being on the achievement of these ends and the development of a process to achieve this. However this aim is based on the successful transmission of the mission statement. Successful communication should lead to "People talking about the mission and pursuing mission goals". The next loop adds the delays before which the mission can be effectively implemented. "Development of mission goals" is a step where the mission statement is translated into actions at an operational level, and then time is made available for the achievement of these goals, which would then result in "Clarity of shared mission". If this diagram were effective the organisation would have a shared organisational culture based on a shared understanding of mission goals working towards the same ends. As

was emphasised earlier, and recommended by the ACSNI committee (HSC, 1993), it is fundamental to organisations with an effective safety culture to have personnel who understand, and agree with the corporate goals and the methods used to achieve these. So an organisational culture would be where everybody in the organisation is dedicated to, and has enthusiasm for, the continuing achievement of the mission.

However this diagram which is based on the concept of organisational learning proposed by Senge (1990), is taken from a management perspective and overlooks crucial components of the organisational culture. Key features which could act as barriers to the organisational mission are:

1. a belief in the social railway, that is a railway run for the good of the country and the customers, and not run for profit;

2. decisions taken by management had resulted in job losses, which meant the train service had deteriorated;

3. the workforce define themselves in terms of their role (e.g. a train driver, or a booking office clerk), as opposed to part of a team working towards an "economically successful business";

4. the concept of customers is alien to the workforce as they define themselves in terms of providing a train service for passengers;

5. job security is a key concern of the workforce, and they feel that no assurances are being given about their future;

6. privatisation is against the beliefs and principles of the workforce.

These factors are in direct opposition to the philosophy underlying the mission statement, which emphasises a move from a nationalised industry towards an economically competitive company with the emphasis on the customer. Consequently implementation of the mission does not achieve its desired end. The organisation recognises that they are failing to achieve mission goals but fails to realise why they fail. It is proposed that the underlying reason is linked to a failure of communications and the incompatibility between the mission goals and the organisational culture.

The mission statement was devised by management as a means to attain organisational backing, and to direct the change of the organisational culture. The 'mission-lead' organisation, due to its conflict with the existing organisational culture, failed to materialise and the changes desired by management failed to occur. This

fundamentally rests on the differences of philosophy of management and the workforce, and relates in part to privatisation. This is asyntonic communication (as discussed earlier) where management are isolated due to cultural barriers in the organisation, and the lack of understanding between parties about attitudes and beliefs.

It is proposed to develop a series of system diagrams to show how communications fail. This framework can then be used to consider communications and safety culture as the source of some of the organisation's problems. The mission statement demonstrates management's standpoint and highlight's the emphasis on business objectives. This is rational behaviour from management's perspective within an organisational moving towards privatisation. Several managers within the Railway Group were removed from positions as a result of failing to increase the profitability of these organisations, and increase their allure for potential buyers.

### 11.3.2 Fixes that fail

Senge (1990) proposes a model of 'Fixes that fail' which identifies the solutions to problems and how they tend to fail. He describes it thus:

> "A fix, effective in the short term, has unforeseen long-term consequences which may require even more use of the same fix."

This basic model of fixes that fail will be used to systematise the undertakings in the organisation, attempting to detail the decision processes of management and the subsequent actions taken by the workforce, and how some of the strategies failed to achieve their desired ends.

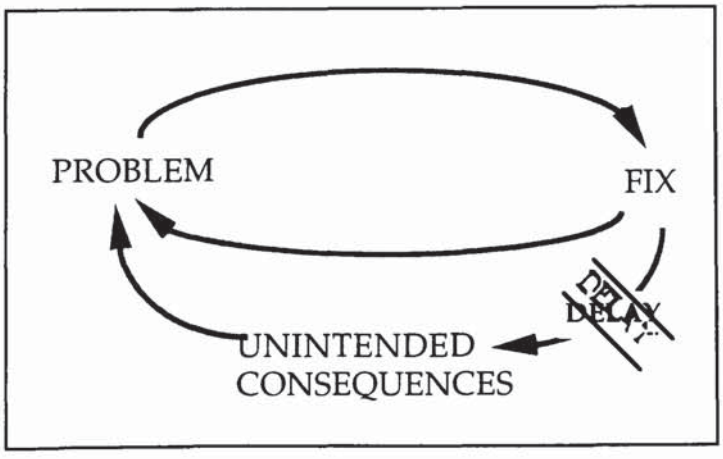


*Figure Eight: Fixes that fail*

Figure Eight is an adaptation from Senge (1990). Fundamentally a problem is identified when the desired behaviour of a system is not being attained, which results in a solution or fix being implemented. The fix can result in either immediate problems, or following a delay can lead to unintended consequences and further problems. This notion is applied to cascade briefings within the organisation. The Problems identified by management which they want to rectify when implementing the cascade brief were:

- poor Communications in the Production Function; and
- the organisation's rumour-driven nature.

The 'Fix' identified was to implement an organisation-wide communication strategy in the form of cascade briefings. Safety briefings are an essential component of railway culture and an industry requirement. The Managing Director's safety policy included the following statement:

> "All employees are actively involved in a briefing and meetings structure which promotes safety awareness and aims to reduce loss through increased understanding of risk."

The cascade brief is analysed according to the philosophy of learning organisations and results in Figure Nine.

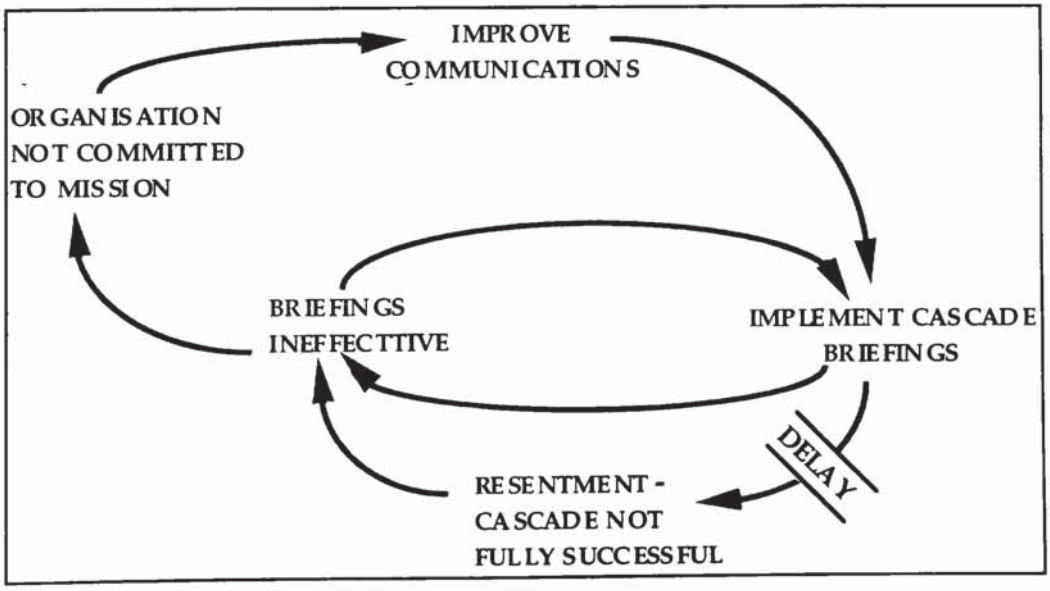


*Figure Nine: Fixes That Fail - Cascade Briefing*

Cascade briefings are elaborated according to the model of Fixes that Fail. Within this context unintended consequences refer to the extent to which the solution is implemented and side effects. With reference to cascade briefings the following affects the efficacy of system implementation. Communications were identified as ineffective,

the solution to this involved the development of the cascade briefing strategy. Cascade briefings were a solution also to the organisation as a whole not being committed to the mission, so there was a need to communicate this to the workforce. The solution 'implement cascade briefing' resulted in further problems including ineffective communications and resentment. The first problem included a failure to implement brief. There is a range of behaviours associated with implementing the cascade. These are:

- Commitment - individual wants cascade, takes actions to implement and creates a system for achieving its goals;
- Enrolment - individual wants the cascade briefing system, and will do whatever can be done to achieve this;
- Genuine Compliance - individual can see the benefits of briefing, but follows the procedure verbatim;
- Formal Compliance - individual sees the benefits of briefing, and does what is expected but no more;
- Grudging Compliance - can not see the benefits of the system but carries out the briefs and complains;
- Non compliance - does not conduct briefs;
- Apathy - neither for nor against the briefing process.

The perspective taken for compliance is that of satisfying the needs of the audience and the company and attaining 'action', as opposed to complying with the diktat of management (i.e. the formal procedure). Hence commitment was shown by one location where systems were set-up for effective communications, which did not strictly comply with organisational procedures. The system was effective and attained commitment to the organisation, and particularly their team. This falls into the realm of single loop learning where problems are identified and tackled. However most of the organisation did not display commitment and were predominantly 'Formal Compliance' and 'Apathy'. These groups did not even show single loop learning and at the level of the organisation the systems continued to fail.

Hence communications within the organisation were failing. The organisation was committed to having successful communications as shown by statements in the safety

case and safety plan. In the company's Safety Plan for 1995/6 the statement concerning communications was:

> Every employee of the company regularly attends a local safety meeting. Each meeting is chaired by a key communicator, who also attends the next level of safety meetings as a member. This enables issues of concern to be elevated to the appropriate level for resolution. Formal records are maintained.

The researcher submitted a report to the organisation in June 1995 which detailed the findings from research interviews conducted in April and May 1995 (Study One). The main findings related to poor morale, general dissatisfaction with communication and a lack of understanding of, and hence commitment to, the new organisational structure. A further issue identified was rumours and how management did not dispel these. This prompted the Internal Communications Group to present a paper to the Executive Management Group, seeking endorsement for a number of changes to the briefing process. The purpose of Communication was defined by them as to:

> "assist in the process of effective management of the business by:
>
> - circulating instructions, information, etc. enabling employees to do their jobs effectively;
> - informing staff about issues and information which will create a better understanding of business needs and priorities;
> - addressing, when and where appropriate areas of concern to staff."

They stated that to succeed in communicating required communications to be focused and relevant to target groups. Their main concern related to the fact that no vision or strategy had been communicated to staff; they believed this was essential and should emanate from the business plan objectives. It was proposed that the media to be used would be 'Briefing Matters' which would be composed of three topics, one safety and two high level business issues. It would be prepared monthly for transmission down the hierarchy.

The Internal Communication Group made further recommendations concerning 'Briefing Matters'. They asserted that it should contain safety and business information relevant to the whole of the Train Operating Company, and not just part of the organisation. They followed that it should not be a "vehicle for what might be termed emotional issues or for functional issues although these could be adopted by local management at the briefing sessions if appropriate", and "Briefing Matters also be used to scotch

rumours that appear in the media or elsewhere... this way we know that all staff are getting the same, correct information." They recommended that messages for inclusion in the briefs should be: financial performance, service delivery, customer perception and business development. As can be seen from this list the emphasis of the brief has shifted from solely safety to predominantly business.

The cascade process was modified and implemented, and the process in reality resembled Figure Ten. The management team hoped to change the organisational culture through the process of communication, and attain commitment to the organisation's mission. In reality however this process did not work and there was a mismatch between what management required and the reality within the organisation.

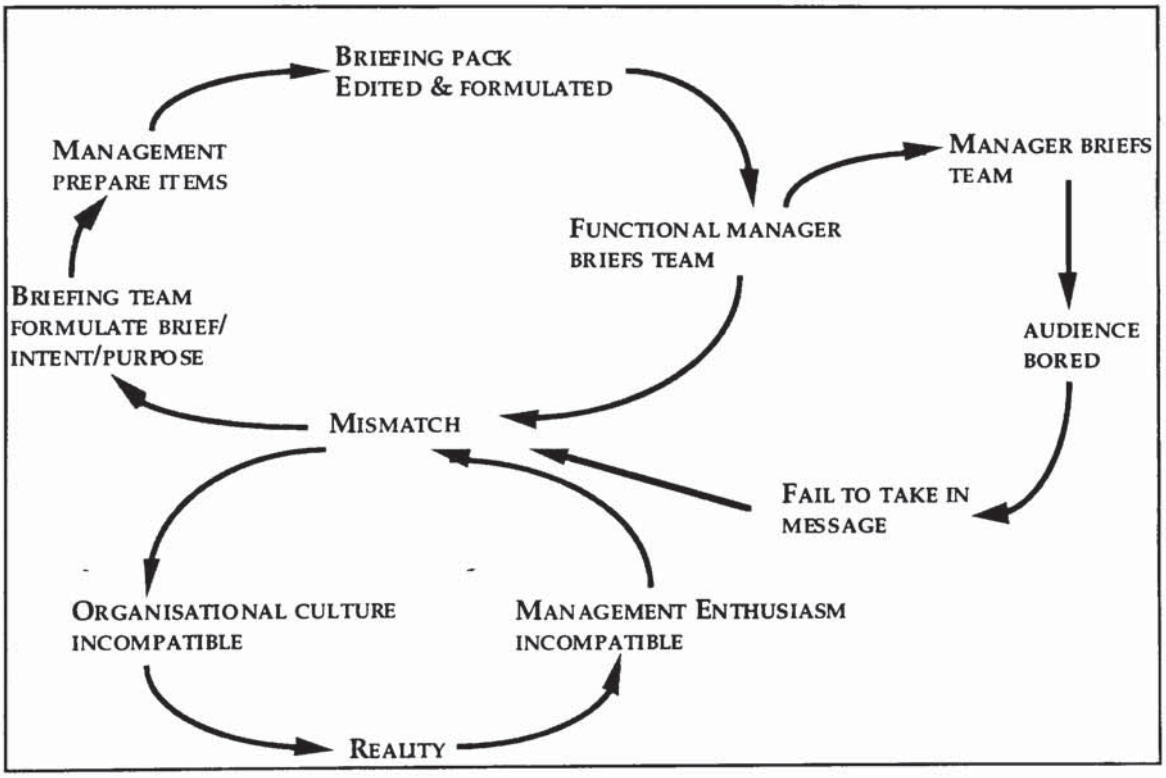


*Figure Ten: Cascade Briefing- reality*

The loop at the top left hand corner identifies a mismatch, this mismatch derives from the incompatibility between the organisational culture and management enthusiasm (bottom left hand corner). The mismatch results in the briefing team formulating the brief intent and purpose; management prepare the items, the pack is edited and formulated and the functional manager briefs the team which leads to the continuing mismatch. The loop which elaborates "Functional manager briefs team", has the next step of the manager briefing his team, the audience being bored and failing to take in the message. This aspect is elaborated in Figure Eleven which operates at the level of the briefer and displays how the cascade fails at this level.

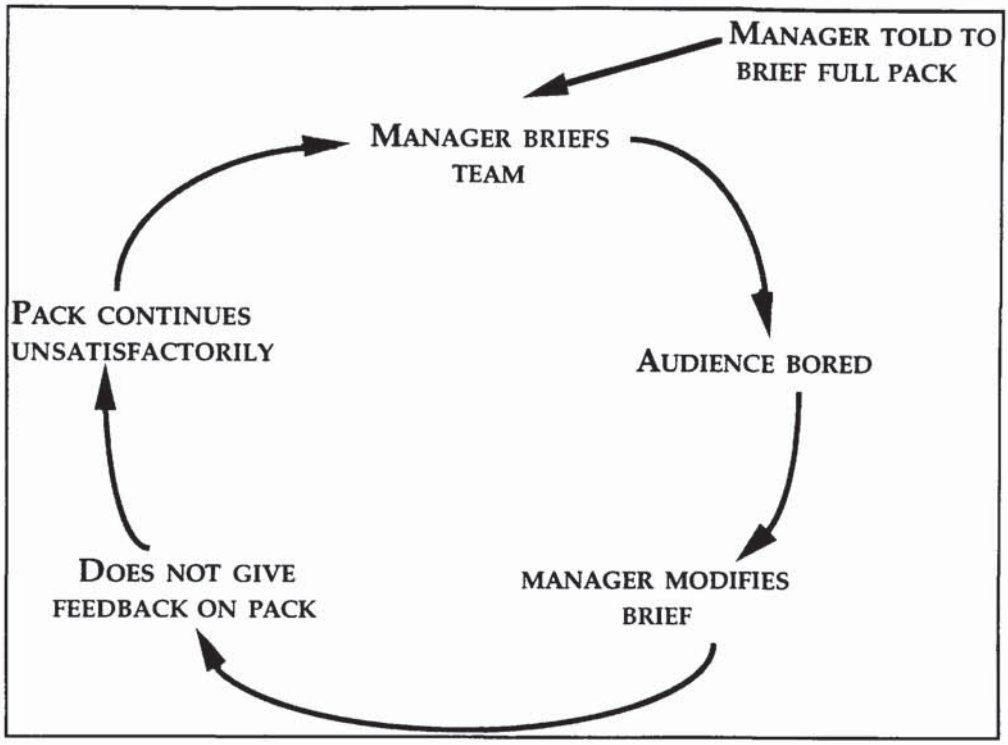


*Figure Eleven: At the Level of Team Brief*

Procedures exist in the organisation informing briefing protocol. Fundamentally the packs should be used to brief the team, precisely as given. The above loop operates over time, management brief the team, the audience are bored (for whatever reason) which results in the manager modifying the brief. These changes are not fed up the hierarchy so briefing packs continue to be unsatisfactory. The figure therefore holds one of the reasons why management intent is not attained, this is feedback. The team formulating the packs should collect this information and modify the briefs accordingly, however the feedback loop is absent, and/or ineffective. Some areas modified the brief, tackled logistical problems, and overcame problems with the organisational culture. However these solutions and remedies were not communicated to the organisation as a whole so communications continued to be ineffective. So this results in Figure Ten where a mismatch between the organisational culture and management continues due to a failure in communications.

## 11.4 SUMMARY

This chapter has discussed the research findings with reference to the academic literature. These research findings were consistent with previous research. However on the notion of the organisation's holistic safety culture the current research deviated from previous statements of safety culture. The current research asserts that the

organisation displays a positive safety culture for its operating environment, which violates the notions of safety culture previously defined. It is proposed that with changes in the organisation of the industry and particularly the safety management, that a previously satisfactory safety culture may not be adequate. The organisation had attempted to change its culture through the use of cascade briefs, these were ineffective within the organisation. They failed to be fully effective for the reasons discussed. The cascade briefs were elaborated in an example of figures which display how and why the organisation fails to learn. Organisational learning is posited as the an organisational panacea, which through increasing the role of individuals in the organisation will result in improved performance, both with regards to safety and operating performance.

# CHAPTER TWELVE

## *Discussion: wider implications*

> Human beings, who are almost unique in the ability to learn from the experience of others, are also remarkable for their apparent disinclination to do so.
>
> Douglas Adams, Last chance to see.

This chapter looks at safety culture and communications and considers the concept of safety culture following this research. It also discusses potential problems the railway industry could encounter as it moves into the private sector, based on an extension of the research findings. Finally the research methodology is critically reviewed, closing with the directions safety culture and safety management may take.

## 12.1 INTRODUCTION

The current research involved a study of safety culture and communications within the British railway industry. The industry is moving towards privatisation from a large nationalised industry, and as a consequence was in a state of flux whilst the research was conducted. Safety culture is considered a useful concept, and there are moves within many industries to manipulate the organisational safety culture to improve safety performance. The organisation studied in this research was one such organisation. Through the use of communications, and in particular cascade briefings, The Train Operating Company attempted to modify their organisational culture and safety culture. Their belief was if communications were rectified then through the mechanism of safety culture, safety performance would improve. The current research shows that it is perhaps foolhardy to attempt to modify safety culture, particularly if the safety culture 'works' (i.e. staff comply with safety systems, and exhibit positive attitudes towards safety) and the environment is technologically low or has low/moderate interaction and coupling as defined by Perrow (1984) and discussed in Chapter Four. It is proposed that in some industries it may be possible to modify the safety culture, particularly where there are good industrial relations, high job security, and weak safety attitudes. The railway traditionally has strong safety attitudes, and the changes required within the organisation are not viewed by the workforce as improving the safety of the organisation, there is a lack of job security, poor industrial

relations and it is proposed that commitment to change will be difficult to achieve because of these factors.

## 12.2 CURRENT RESEARCH

The concept of safety culture is widely used within the nuclear industry, as well as in the industrial sector. It also has received attention within the rail industry, in particular in response to the major accident at Clapham Junction. The rail industry is different from the major hazard industries, in that it is low technology and high risk; compared to high technology and high risk (e.g. the nuclear industry). Safety is also managed differently within this industry. Traditionally it was rulebook driven and prescriptive, with strong controls for individuals who failed to obey these procedures. There was a degree of pride associated with knowledge of the rulebook, with impromptu tests on it.

The railway's safety culture is therefore predicated on a traditional safety philosophy where the focus is on individual responsibilities. In the event of an accident the motivation of a person carrying out the system of work is questioned. This is closely linked to the idea of negligence and apportioning blame. Accidents within this culture are assigned to the carelessness of individuals. These result in discipline and the management system being reactive, so actions are taken in response to accidents. However with the privatisation of the railways, and an increase in the use of risk assessments and cost benefit analysis the management of safety within the railways has changed. There is a move towards a risk management model. The underlying philosophy in risk management is the concept of a safe work system. Human errors in this context result from a mismatch between the task, the physical and mental capabilities of the individual and the characteristics of the system. Hence changes are made to workplace design, job aids and procedures following accidents. Lucas (1992) states, "Railways which carry passengers and have large numbers of rail staff combined with a moderately high technology need an equal mix of occupational safety and risk management." Hence the change is required in the organisation, as the traditional safety system is no longer sufficient and needs to operate in parallel with a risk management-based approach. This changes requires workforce commitment to safety as per the traditional safety culture, but also a recognition and understanding of the risk management mode of operating.

Traditionally the railway safety culture was based on a knowledge of the rulebook, and a compliance with this. However this was partnered with a macho culture of risk taking, and performing the job for the good of the train service. Individuals met during the course of this research, discussed major disasters from the past, number of

fatalities and what workers did for the 'good of the railway'. Their safety culture demonstrates good safety attitudes, knowledge of the rulebook and their associated responsibilities, and the bounds of safety within which they comply. The current research identified this safety culture as prevalent, especially in operational areas (e.g. traincrew), where individuals were aware of their responsibilities, and acknowledged cutting corners and violating safety rules for the good of the train service. These violations were not for the good of the company, rather it was the maintenance of the train service, although to a certain extent the outcomes are compatible. Although on paper the safety culture could be said to be negative, according to safety culture checklists (e.g. see Chapter Ten for review), it is a safety culture built upon 150 years of tradition and operational experience. So individuals behave safely and appropriately within the railway environment, and this culture was appropriate in a single company environment. It is proposed that since the complexity of the industry has increased as shown in Chapter Four that there is a necessity to change the safety culture to ensure the organisation can maintain operational safety.

Moves towards a risk-based management structure within the organisation and its incorporation in the Safety Case, would suggest that the safety culture would improve. The changes in the British Railways industry have resulted in a multi-company environment, with changes in the management of safety, the incorporation of the Safety Case, and the differing priorities within the franchised railway. These have resulted in a deterioration of the safety culture due to widespread disillusionment, diminished morale, a lack of job security, poor staff-management relations, rumours and uncertainty. The organisation studied in this research attempted to modify both the organisational culture and its safety culture. The strategy used was through cascade briefings, and consistent communications. Research identified this as ineffective. Reasons for failure include communications not based on mutual trust, an ineffective process, and contradictions implicit within organisational messages. The organisational messages were designed to increase commitment to organisational goals (e.g. decreasing costs, and increasing income) as well as improving safety. The dilemma therefore is how to improve the safety culture, as the operational culture prevents both effective communications and prevents the modification of the existing safety culture suitable for the current operating structure.

### 12.2.1 Learned helplessness

All recommendations on organisational communications state they should be two-way with multiple channels. Communications within the company were designed as two-way, but in practice were predominantly one-way and downwards. It is proposed that

the safety culture could have been improved as well as cascade briefings if staff could participate and be involved in the development of the safety management systems. One of the principal complaints throughout the organisation was that safety management systems and procedures were inappropriate, or new systems replaced successful old ones, or the new were inoperable. This resulted in the workforce failing to comply with the systems, and then failing to feed back this information and the systems continuing to be ineffective. The organisations therefore was failing to learn, and did not attempt to change the systems. This is consistent with the psychological concept of 'learned helplessness' which can be a cause of depression. Learned helplessness is characterised by feelings of powerlessness that result from negative experiences over which the individual has no control. If the stressful situations continue and the individual is not successful in coping then apathy can deepen into depression. So a sense of hopelessness is paired with a reduced motivation to control events because events and outcomes are perceived as independent of individual actions (Gregory, 1988). Treatment of learned helplessness could involve efforts to bring about feelings of control (i.e. to reduce helplessness), and involves the presentation of situations where the individual learns that outcomes can be affected by behaviour.

Within the company members believe that changes have come about to the organisation against their wishes and that there are no actions they can take to alter an undesirable outcome (e.g. the privatisation of the railway industry). The analogy of learned helplessness describes many organisational characteristics found in this study. For example certain events, such as privatisation, and the imposition of the safety case, were beyond individual control, and resulted in symptoms such as failing to give feedback, failing to take corrective actions in response to certain situations, and suffering from low morale. So as a result of certain situations the organisation fails to learn, as defined by Argyris & Schon (1978, 1996), for example.

If the analogy of learned helplessness is continued it is not surprising that change strategies failed in the organisation. The strategies designed to change the organisational culture continue to draw staff's attention to the lack of control within the organisation, both through the content of the cascade brief, and the lack of discretion. The content of briefs were patronising content, the emphasis on management actions and the threatening nature. Whilst lack of discretion refers to the viability of individuals within the organisation to take acts which affect outcomes. This operates at all levels within the organisation from the workforce to management. Management are unable to affect the organisation's destiny in terms of their degrees of freedom to take action concerning political events, and events affecting the

privatisation of the railways. This in part is due to privatisation and the organisational operating environment. The organisation has little power to affect events which influence the organisation, including the resolution of safety and business issues. Continuing the learned helplessness analogy, to treat the situation the organisation would need to increase organisational control at all levels of the hierarchy, to involve individuals in decision-making, and participate in the management of the organisation. This would parallel the treatment of depression, where the depressed are taught how to regain control in certain situations, and to reshape their own erroneous beliefs. Strategies should include increased consultation and participation in events, and the devolution of responsibilities throughout the hierarchy. This, however would only work at lower levels of the organisation and not for management, as management have little discretion to affect the policies of Railtrack and the government. Strategies would need to be devised to increase management's control and to demonstrate to the entire organisation their control.

It is proposed that learned helplessness corresponds to the organisational malaise identified within the company, and that until this is overcome the safety culture will not be improved. The safety culture weaknesses identified are linked to the organisational culture and the fact that there are poor management-workforce relations, poor communications, and a failure throughout the organisation to resolve issues. Within a number of areas the symptoms of depression were less prominent, these were areas where new managers (both to the company and to the railways), with none of the old biases, had been introduced. These managers made enormous efforts to resolve organisational problems and increased the involvement of their workforce at these locations. It is interesting to note that this effect had diminished by Study Two where the managers were older and had more organisational experience, could see little effect from their actions, so were no longer persevering with change.

The characteristics identified are not linked directly to the safety culture, but to the organisational culture. It would seem that the organisation is widely apathetic, with many individuals not actively promoting safety as they perceive their actions as ineffectual. It would seem likely that as the process of privatisation continues that learned helplessness will persist. It is proposed that when the organisation is franchised and all operating contracts are settled that the organisation could improve as the environment stabilises, and individual discretion increases.

The way for improving the organisational safety culture would be through improved communications, particularly increased consultation and participation in the development of safety management systems. Fundamental to the success of these

strategies is the concept of learning. There is a move generally within organisational theory towards organisational learning, which is seen as a panacea to many problems in organisations. It is recommended that the concept of organisational learning and its influence on safety culture is examined. In particular the role of individuals feeding bad news up the hierarchy needs to be considered and their attempts to influence management policies and decision-making. The latter could be achieved if they could effect double-loop learning (as defined by Argyris & Schon, 1978, 1996).

It is suggested that organisational learning is easier to operationalise and that the improvement of organisational learning will affect safety in the organisation. Most strategies for improving safety culture are difficult to operationalise, operate at a general and non-specific level, or are prescriptive in terms of developing safety management systems. Strategies for encouraging a learning environment are less specific and act at the level of teaching people to question values and underlying reasons for their problems. Through a recognition of their problems and an understanding of 'fixes' and single loop learning, organisations can learn about double loop learning. Single loop learning is where a 'fix' could result in further problems as the underlying values remain unchanged, which highlights the importance of developing programmes to avoid solely making fixes.

At this stage it is important to recognise my role in perpetuating the myth that safety culture and organisational communications are easy to resolve. My role as a researcher was in providing 'fixes' and solutions for the organisation, which maintains the 'habit' of single loop learning. The organisation wanted the research done to improve their safety communications and safety culture, and wanted to identify steps to rectify the problems identified. Most of the recommendations were fixes, recommending changes at the level of the workforce, and not on the whole recommending change at the level of legislation or management policy. So my proposed solutions perpetuate single-loop learning. Single loop learning is mediated by organisational inquiry and connects detected error (i.e. an outcome of action mismatched to expectations) to organisational strategies of action and underlying assumptions. These strategies and/or assumptions are modified to keep performance within a range of existing values and norms. So the norms and values remain unchanged. This is also the level at which organisational inquiries act when making recommendations on disasters. Rarely are recommendations made which act on the industry's theory-in-use or question its underlying assumptions and values. Recommendations questioning or tackling these underlying assumptions are referred to as double loop learning. Double loop learning is learning that results in a change in the values of the theory-in-use, as well as its strategies and assumptions. Theory-in-use is the theory of action which is implicit in the performance of an activity

(i.e. what is done). At the level of the organisation, theory-in-use could cover communication and control, allocating resources to functions, rewarding or punishing individuals, and recruiting new members and instructing them. Hence double loop learning requires these assumptions to be questioned, and changed if necessary. This is threatening to organisations since many of these assumptions and values are tacit and undiscussable, according to Argyris and Schon (1996). For an organisational culture to be changed double loop learning is required. Some areas of the organisation are showing single loop learning where solutions to problems are identified and remedied, however this knowledge is not fed up the hierarchy. This results in either solutions not being shared, so common problems are not remedied throughout the organisation, or the underlying policies and procedures are not questioned or modified in the light of operational experience.

This research therefore has relevance for the concept of safety culture, communications and organisational learning. These are discussed next.

### 12.2.2 Safety Culture

Since its first usage, safety culture has been used as a catch-all term for the human element within organisational systems, and to a certain extent used as an excuse for accidents. It has tended to be used to explain how organisations with well-developed safety management systems still have accidents. Hence the term has developed to cover the role of individuals in a system, and their effect upon the implementation of safety management systems, and the overall safety of the system. It emerged as a concept within the high technology, high risk nuclear industry, or according to Perrow (1984) an industry that is both tightly coupled and complexly interactive, where systems and procedures are well developed, but accidents still occurred. It was realised that procedures and supervision were not fully effective, and that if individuals were motivated, through the safety culture, that system safety could be maintained. However in low technology, high risk environments (e.g. railway industry) where the rulebook has a well-defined role and covers most tasks and eventualities built upon 150 years of operating experience, there is less need to cope with the unexpected. However in its move towards a multi-company environment, greater uncertainties, differing financial priorities and different actions, an effective safety culture is more important. Safety culture affects the implementation and adoption of safety management systems which is affected by management relations, poor communications, lack of consultation and a failure to feedback information

### 12.2.3 Organisational Communications

Organisational communications are found to be fundamental for an effective safety culture, as well as providing a learning medium for the organisation. Improving communications is linked to the organisational culture and the relationships between the different stake holders in communications, as well as the logistics of communicating and linguistic difficulties. The importance of communications is being aware of problems, failing to take action to resolve problems and a failure to communicate problems with policy (i.e. debugging policy), so that organisational policy and mission continues to be ineffective. Care should be exercised when modifying communications and organisational cultures as change in one will have an effect on the other. The direction of change will depend will influence its affect. However it should be remembered that culture is a product of more than just communications, and therefore communications may only modify the organisational culture within certain bounds specified by the organisational culture.

### 12.2.4 Organisational Learning

Organisational learning is a concept which is becoming increasingly popular with management theorists. It is the degree to which an organisation uses knowledge from past experiences to improve future performances. Interest in the concept possibly arose from the realisation that organisations failed to achieve their potential and that continual reorganisations and demanning meant that organisations were failing to learn from past events and that valuable experiences were lost.

Organisational learning and ways to enhance an organisation's ability to identify and resolve their problems would seem to be a way to enhance both communications and safety culture. Many within the organisation were aware of their problems, some had locally implemented change, none however had communicated problems up the hierarchy or attempted to modify policy. Blame can also be apportioned to management who fail to consult about systems, have no methods for participative management and generally denigrate their workforce. Management within the organisation develop policies and procedures which are implemented and then fail to achieve their desired consequences. Management make efforts to receive feedback on the efficacy of their systems, however these are not effective either. For example, the intent of the cascade brief, was amongst other things, to attain organisational commitment. To verify the effectiveness of the cascade brief an audit was designed and conducted to collect information on briefings. It found that briefing records were only kept for 50% of the briefings. This meant that the other 50% either did not conduct briefs or failed to keep records. The audit failed to discriminate between these

two groups, and failed to identify the true extent of organisational commitment to the system. This therefore allows management to believe that there is non-compliance with the systems, and that the solution is to emphasise the importance of carrying out briefs within the organisation. This then results in the organisation 'fixing' the problem, the organisation complying on paper and the system continuing to be ineffective in terms of achieving organisational commitment, as was identified in this research.

Owing to the secrecy of the railway industry and the conflicting need for cooperation a situation could occur where full effective learning will be prevented by failing to utilise communications effectively, for fear of competitive advantage, legal action etc. This was one of the difficulties encountered following the incident with the Exxon Valdez where a full and accurate investigation was hindered by people protecting their interests. This is now the case within the railway industry, and can be seen in reactions to operating incidents, where the various companies all protect their interests. This was demonstrated in a recent organisational accident, where organisation members were told not to speak to anyone, particularly not the media or the HSE. All parties involved protect their own interests, which are not for the good of the industry and will not result in a frank and open discussion of accident causes. It is important to identify both the precipitating action and the latent causes in the operating environment to learn effectively.

## 12.3 IMPLICATIONS FOR ORGANISATIONAL CHANGE

This research has wide-reaching implications for the changing railway industry and the control of safety in the new environment. It is proposed that the following could occur:

- Safety cases fail to be fully effective as they are:
  - ineffectively implemented;
  - developed by inexperienced individuals, whether consultants or workforce;
  - workforce never involved in the process so do not feedback operating experience;
- Organisations will never learn when at an individual level people do not have the discretion to act. This is due to the way the railways have been privatised.
- Change will be difficult due to a cynical workforce and a 150 year old tradition;

- Operating franchises are granted for only seven years, and will result in short term actions to get rapid profits and a good rate of return for the shareholders. Due to the short time frame it is unlikely that safety will achieve the necessary commitment.

The implications from this research for the railways would seem to be predominantly gloomy. However many individuals within the organisation show efforts to resolve organisational challenges, the reasons for incomplete learning seems to be competitiveness between the functional divisions. If the organisation can understand the importance of sharing solutions and communicating difficulties and proposed solutions up the hierarchy then organisational learning will be facilitated.

One of the fundamental findings is that the organisational culture prevents effective communications within the organisation, it is speculated though that as the system stabilises that the organisational culture could improve, particularly if individuals feel involved with organisational solutions. With regard to safety systems it is plausible that because people think they are inappropriate and unworkable and create problems that successful briefings will fail to modify these perceptions. It is necessary when communicating that the 'why' and not just the 'what' are explained so that individuals understand the purpose of the system.

## 12.4 CRITICAL REVIEW OF METHODOLOGY, ANALYSIS AND RESEARCH FINDINGS

This research thesis is based on research data collected within a real life setting, using predominantly qualitative methods. There were a number of reasons justifying the choice of research methodology which were discussed earlier in the thesis (Chapter 6), the intent here is review the success of the research, and the validity of the research findings, and discuss possible methods for improvement. This critical review starts with a discussion of the efficacy of the data collection methods, and the use of triangulation and mixed methods, and then discuss the problems with fieldwork, and the effects of the data collection procedures on the validity of the findings.

### 12.4.1 Data Collection Methods

A variety of data collection techniques were used in this mixed methodology research. They were observation, interviews and questionnaires. This section will critically review the efficacy of these techniques in achieving the research objectives.

### *12.4.1.1 Interviews*

The topics reviewed under interviews will be participants, question set effectiveness, and the interview protocol. The first, participants, is common to the following section on questionnaires.

### *12.4.1.2 Participants*

Participants for this study were selected randomly within certain constraints. The research methodology and previous research suggested that a stratified sampling strategy be used. This involves a greater proportion of managers being interviewed than would occur if a random sample was selected. All participants were working on day shifts when they were interviewed. No group interviews were conducted, which may have facilitated greater responses, but due to the work organisation this would have been difficult to coordinate and achieve. The research findings can not be declared as fully representative of the organisation, as all individuals were not interviewed. However it is believed that the sampling strategy provides a representative response from the organisation. Difficulties emerged during Study Two, where the intent was to conduct repeat interviews from Study One. These difficulties were due to reorganisations, and people changing roles, leaving the organisation or moving to different locations. In this instance the same personnel were interviewed where possible, along with individuals who held the same work role as the individual interviewed previously. As a consequence the sample was not identical. However individuals in the same roles were maintained. As a consequence the second sample was smaller.

### *12.4.1.3 Effectiveness of Question Set*

The question set was initially piloted on the organisation, subsequently modified and then applied in Study One. The question set was then further modified and summarised for use in Study Two. The questions were designed to elicit comprehensive responses from individuals and where possible to avoid one-word answers. It was realised that some of the questions were ambiguous or asked questions on topics of which some participants had no understanding. In these instances, due to the intent of the question set, the interviewer explained, or elaborated upon the point of misunderstanding. If more time had been available, each modified question set should have been piloted. However due to time constraints, and the size of the organisation this was deemed inappropriate and the inadequacies of the question set were dealt with in each interview situation. The data analysis stage was designed to overcome these inconsistencies, through the development of matrices on people's perceptions.

Responses to questions were written down in note form during each interview. Every effort was made to record verbatim responses. Responses were edited whilst notetaking, to eliminate pauses, 'erhmms' and so on. Audio-taping the interviews would be a possibility for future research, it was not deemed appropriate for the current study. The note taking appeared to be effective and few responses were missed. The participants were courteous, and were happy to participate in the study. It is possible that participants are keen to cooperate when they are not 'on tape', but that willingness to participate could diminish if they were taped, and would possibly modify their full and 'open' responses. It is proposed that this would particularly be the case for managers, where assurances of anonymity were sought.

### *12.4.1.4 Interview protocol*

The interview protocol used involved explaining to all participants the purpose of the study, and to emphasise the importance of giving full and honest answers. Participants were guaranteed anonymity and the format of the final report explained to ensure they participated in the study fully. Anonymity did not appear to be a concern within the organisation, with most stating they did not mind the information going further.

When the interviews were conducted every effort was made to establish rapport with the participants, to avoid dominating the interview and not to ask leading questions. In fact most participants enjoyed being interviewed; a number thanked the interviewer for talking to them. Time was a major factor when conducting the interviews. It is suggested that a certain time is allocated for the interviews, as some participants had limited time available, and the interview was not concluded. For these instances their responses, although incomplete were used. This was a particular problem with traincrew where a lot of work involves dealing with contingencies and unexpected events. This is difficult to overcome in research conducted in field settings as the interviewer tries to be unobtrusive and not bias the setting. This was one of the principal problems, where the researcher can not be too forceful or intrusive in the field setting.

### *12.4.1.5 Questionnaires*

The questionnaire was verbally administered as part of the question set used in Study Two. The questions were derived from a survey conducted in 1992, commissioned by British Rail. The questions selected were those considered relevant for the current study. The previous survey was conducted throughout the organisation with a large sample, and was valid and reliable. It is presumed that the question set was well

piloted, with balanced questions. On this basis identical questions were selected and used.

The question set was administered to all participants verbally in Study Two. No explanation was given for this component of the interview and the participants had no difficulty responding, and were happy to justify their responses. Although this aspect of the research was successful it would have been inappropriate to conduct an organisation-wide survey. This would have resulted in a poor response rate, poor causal data and would possibly have caused organisational resentment, when the results were not fed back to the organisation (as they weren't in the previous study).

### *12.4.1.6 Observation*

Many meetings were observed within the study. Some involved the use of a pro-forma, others involved observing and note-taking. In most instances in the organisation, proceedings carried on as though the researcher was not observing. In most occasions my presence was explained by reducing my threatening nature and denigrating management, eg. "She's heard how its meant to work from Mental House and now she's here to see what its really like" (sic)

### *12.4.1.7 Summary*

A number of problems emerged with each component of the data collection stage of the research. The principle concerns were the lack of control of organisational events, and the difficulties with a new organisation. However due to the use of multiple methods and the concept of triangulation a consistent picture was identified, and the strengths of each method outweighed the weaknesses.

The issue of lack of control is that the organisation carries on its organisational life, and that the researcher has no influence over the events. This was overcome in the fieldwork stages by opportunism, and by the researcher keeping up-to-date with organisational events, and taking all opportunities offered to collect data.

Problems with a new organisation, relate to the state of organisational flux, which was evidenced by continuing reorganisations, redundancies and changes to the operating environment. The organisation also was enormously different from its predecessor, in terms of size and the activities conducted. This makes extrapolation of safety statistics invalid. It is suggested that the current research study be repeated after a few years to investigate the impact of the safety culture and organisational change on its safety performance. This would be relatively simple if key questions were extracted,

and the survey questions used. This study identified little change in responses, which could either be due to the lack of sensitivity in the research instrument or to the stability of the organisational culture. The former refers to general questions, and the fact that large attitude change would take longer than eight months, however the massive change in operating environment will start to have some effect on the organisation. It is suggested that change will be slow due to the persistent and ingrained nature of the culture, but that changes should have occurred within a couple of years. It is impossible to predict the direction of the changes, as either the culture will become entrenched and further apart from management's desired culture, or it will have moved towards management's culture.

### 12.4.2 Data Analysis Methods

The first stage of preparing the data for analysis was division of the interview data into categories. The problem with this type of analysis is that it does not provide a model of the data, however the categorisation of the data would suggest that it does. The categories are loosely based on the question topics and the issues raised are restricted to those, hence no model or relationship can be deduced from the topics.

This study did not assess whether these topics identify all the issues raised in the interviews. This would require a thorough analysis of the interview data of what was not categorised, and cross referencing these to identify areas where the categorisation has restricted the data. It is hoped that because of the data analysis and the development of the matrices and the use of context that bias and oversight was avoided. If this research had been theory driven, then pure grounded theory could have been performed, where written definitions of each category could be prepared to layout formally the boundaries of topics. This would allow other researchers to identify how the data was categorised and attempt to replicate findings. Grounded Theory, involves defining an issue and making explicit the qualities which have been recognised, see Strauss & Corbin (1990) for a review. If each category was formally defined, then missing concepts could have been identified. This would be an appropriate method for an ethnographic study of culture, however this research was performed for both academic and client-centred reasons, and a balance sought.

With the categorisation of the data there is a danger that this will result in a loss of meaning and context. Categorising involves the imposition of the researcher's own interpretation of the data, and once categorised the material has lost its context and perhaps the original meaning of the data. Wellbank (1987) emphasised the importance of keeping the 'expert' interested in the project, in this study interest was maintained in the categorisation process, and the interviewer had a thorough knowledge of the

context of the data. May (1993) also emphasised that categorisation allowed the researcher to become familiar with the data and its particular nuances. It is suggested that matrix analysis kept the context in the data and allowed the topic to be grounded in reality. The difficulty with the matrices is that generalisations had to be made, and summarisations. However many participants responded consistently and the matrices are representative of the data. Matrices also allow the data to be displayed to compare between the categories and between the two time frames and they allow the context of the data to be maintained.

The mixed methodology meant that the research findings were triangulated through the use of multiple data sources. In this research the various stages did allow conclusions to be drawn as a result of verification from the different sources. However it was impossible to link these to measures of organisational performance. It is believed that safety performance could be linked when the organisation has reached its new operating structure and stabilised, to verify the research findings in terms of safety performance.

### 12.4.3 Findings

Due to the lack of control over organisational events, and the lack of control over other factors it is difficult to prove causal linkages between the research findings and organisational performance. It is hoped that the current research has avoided bias and negativity. The research reports the findings as reported, without unduly judging them. This was one of the benefits of the matrices as it allows the data to be displayed in a raw form and show actual opinions. This research is difficult to validate and verify. It is hoped that through the use of the mixed methodology that some of the inherent difficulties of qualitative research are overcome.

#### 12.4.3.1 Individuals within the system

One crucial difference in the use of this method to analyse the system, is consideration of organisational members to identify the safety culture. This is one flaw of techniques evaluating safety management system's efficacy, for although they aim to evaluate an organisation's defences from failure, they neglect the role of the individual (see example given earlier about the communication audits). This methodology considers those aspects of the safety management system which affect the safety culture and the safety performance. The users of the system are considered, and the user's opinions are recognised as the most important contributor to overall safety.

The method used in this study for the analysis of the safety culture. It allowed for the data to be systematically analysed, it was not solely an issue of box-filling, and it involved the identification of specific issues. It also considered the efficacy of various strategies used to modify the safety culture and on this basis make recommendations for change. This is of particular relevance for the recommendations which use the medium of communication, as the current research has also identified problems with communications. By carrying out the recommendations to improve communications initially, the mechanisms to improve the safety culture may be more effective and sustainable.

### 12.4.4 How the Methodology Could be Improved

To improve this research methodology a number of problems need to be overcome. These include the fact that the technique is time consuming; that it is difficult to assess the adequacy of responses; and that no effective method exists to weight the successes and weaknesses of a culture; that it is difficult to assess these factors impact upon safety performance. There were also problems appertaining to the question set, its completeness and the validity of categorising the data. Some problems can be overcome by effective research design, and through the use of grounded theory.

## 12.5 CURRENT TRENDS AND FUTURE RESEARCH

Currently interest in safety management is high due to the recent publication of a British Standard on the management of safety (BSI, 1996). Safety is now viewed as a source of competitive advantage. However this study has highlighted the difficulties of implementing or changing safety management systems, and the incompatibilities between different organisational cultures and the success of their implementation. A possible research question would be to consider different organisational safety cultures and the efficacy of the implementation of the British Standard. It is also important to recognise that different safety cultures will be required for different types of industry, so for example the safety culture required in the railway industry will be substantially different from that in the nuclear industry. It is speculated that there will be a sliding scale for safety cultures which will map onto Perrow's classification of organisations, with the extent or degree to which certain requirements are essential specified for each class of industry.

An issue within the UK Railway Industry concerns the problems of 'short termism'. This is the notion of developing organisations 'looking good enough to buy', where the emphasis is on financially successful organisations. This will affect the implementation

of safety management systems, particularly the commitment which needs to be communicated for successful implementation. It will be necessary to research the success of the safety case framework in maintaining the safety of the railways, particularly at the level of the workforce, including their acceptance and involvement. Also because of the requirements of safety cases few organisations have the requisite skills to develop the safety case, this results in external contractors being involved. The safety case is then not fully accepted, does not become a living document and serves only as an operating requirement.

This research has raised questions about organisational learning. Further work is required to strengthen the link between organisational learning and safety cultures, particularly concerning the question of change.

A further question would involve identifying two organisations, identical except for communication mechanisms. Attempt to specify the effect of communications on safety culture, and the extent to which these communications facilitate double loop learning. The current research has identified an organisation that fails, it is important to identify the extent to which these findings are atypical within organisations, and whether safety information is treated differently within organisations.

The current research was a detailed case study of an organisation, at the micro level, it is important to move towards macro level (small scale to large scale) and consider the implications of change and legislation on the organisations, and how micro findings need to be communicated.

One of the questions arising from this research was the effect of incident inquiries upon the safety culture of an organisation. Within the Railway Industry the Clapham Junction Accident resulted in a formal inquiry and many recommendations (DoT, 1989). These recommendations were backed by government and British Rail in terms of their implementation. However only certain recommendations have been used. Within the organisation these were seen as unfair, and would appear to have a destructive effect on the organisation and management-relations, as well as on the safety culture. It would therefore be interesting to consider the degree of adoption of recommendations, and its effect on the safety culture.

# CHAPTER THIRTEEN

## *Conclusions*

> Men are generally incredulous, never really trusting new things unless they have tested them by experience.
>
> Niccolo Machiavelli, The Prince.

This final chapter of the research thesis reviews the work outlined in the body of the thesis. The summary includes observations and conclusions regarding the fieldwork, interviews and documentary evidence collected during the research. The thesis is that during a period of organisational change the organisation studied failed to learn and did not select effective change strategies. This research attempted to examine the following conundrum: do poor communications result in a poor safety culture, and if so will improved communications improve the safety culture. This question is initially tackled through fieldwork conducted within a company with poor communication strategies. Organisational communications and safety culture were also examined.

There were several reasons for conducting the research. These included:

- A review of literature on organisational communication, organisational learning and safety culture, revealed the crucial importance of organisational learning, particularly for the management of safety and the role of communication in achieving this end;
- an organisation undergoing change to both its internal management systems and to its operating environment;
- an organisation that acknowledged poor organisational communications, and was trying to change these;
- certain strategies devised to implement the new operating environment and a desire to test their effectiveness.

Basically this thesis looks at "the effectiveness of communications within the organisation, and the effect of organisational culture in preventing or facilitating the transmission of material" (as stated in chapter one).

The initial phase of the research involved conducting a series of semi-structured interviews with senior management to identify key problems and issues in the organisation. They identified their main problems as a failure to brief effectively, duplicate systems, and a management-workforce gap. Strategies to change these weaknesses included a revised communications strategy, the development of organisation-wide solutions through the Compliance and Standards function and increased visibility of management. Most of the problems they identified had their causes based in management structures as opposed to specifically safety management. The main step they undertook to remedy these difficulties was the development of a cascade briefing system. The remit of this system was to ensure that:

> "Every employee ... regularly attends a local safety meeting. Each meeting is chaired by a key communicator who also attends the next level of safety meetings as a member. This enables issues of concern to be elevated to the appropriate level for resolution. Formal records are maintained."

The cascade briefing system was chosen as appropriate example to examine communication effectiveness within the organisation. Both the content of the messages transmitted through the hierarchy and its effectiveness in practice were evaluated, through observations and interviews. Communication was chosen as a method for changing both the safety culture and the organisational culture. This research looks at the effectiveness of this, through an examination of change within the organisation in terms of attitudes and perceptions (as gathered from interviews and survey data), and the efficacy of the communication process.

There were two studies done to identify change within the organisation. The first was a follow-up to an attitude survey conducted three years ago, when the organisation still operated under the auspices of British Rail, to identify changes in response to attitude statements about safety, communications, and management. The findings show that over the three year period some of the perceptions have improved significantly. This was particularly the case for perceptions on management and safety. However perceptions of communications and the organisation had not improved, and in some cases had deteriorated. This appears to match the perceptions of management who on the whole identified their problems as communication-based, rather than safety.

The second set of findings relates to Studies One and Two, which were two phases of interviews. The question set was designed to investigate the perceptions and feelings of the workforce concerning the organisation, the management of safety, as well as actual safety at the workplace. The interviews were repeated after an eight month period, to

investigate the degree of change following the implementation of the cascade briefing. Few incidences of change were identified; a stable and consistent organisational culture was identified. Key features of the organisational culture are:

- a strong awareness of individual responsibilities for safety;
- a disregard for, and a misunderstanding of the purpose of, safety management systems;
- opinions of communications and their efficacy, despite implementation of cascade strategy, still poor;
- cutting corners in the organisation is viewed as necessary, and is customary especially in operational areas of the organisation;
- perceptions of management were poor;
- the formal safety function was poorly viewed, and regarded as incompetent by participants;
- lack of communication, consultation and participation were cited as reasons for organisational failure;
- some aspects of safety poorly viewed, particularly concerning the role of Railtrack.

The study of the cascade briefing systems show that:

- the cascade briefing system is ineffective, in most parts of the organisation;
- areas where the brief is successful, are where resources are committed to ensure the brief is tailored to the audience's needs. However this is inconsistent with organisational policy;

Reasons for communication failure include:

- poorly conceived messages, viewed either as irrelevant or propaganda;
- disinterested audience;
- poor management-workforce relations, so there is a huge barrier to overcome just to achieve communication;

- logistical issues of briefing to the organisation, including one-to-one briefs, shiftwork, and the issue of cover for safety critical jobs.

There is no point communicating unless the process is improved. It is proposed that communications could be improved if best practice from certain parts of the organisation are shared throughout. This would include official and unofficial communication routes, high management visibility, tailoring the brief to the audience, increasing levels of trust between the workforce and management and arranging cover for briefing in teams.

Fundamentally this research has examined an organisation undergoing massive change and has investigated the role of communications in facilitating this change. The key findings are that:

1. there is no significant change in the safety culture of the organisation, as evidenced by findings from Studies One and Two;

2. the organisation attempted to manipulate its organisational culture through the use of cascade briefings.

3. the cascade briefings failed to be effective; although some areas had successful communication processes;

4. the organisation showed no attempt to learn. This is evidenced by certain positive practices in the organisation not being communicated through the organisation.

5. it is speculated that improved communications, not only through the cascade briefing system but in the form of participative decision-making and consultation could improve the safety culture and the organisation culture.

The current research studied an organisation which proclaimed to have a poor safety culture from management's perspective along with a lack of commitment to the organisation's goals.

The implications of these research findings are:

1. Organisational learning is important for organisations undergoing change, to ensure strategies are effectively implemented;

2. Mutual trust is an essential component of safety culture as emphasised by the HSC (1993). It has been identified within this research as one of the reasons why change was not achieved, and why safety management systems were not fully implemented;

3. The notion of safety culture needs to take into consideration the type of industry, and be less prescriptive in defining essential characteristics. This is considered essential, particularly during periods of proposed change, when imposed change could be detrimental to the safety culture;

4. Barriers to communication need to be eliminated before the safety culture can be effectively changed. Without effective communication it will be difficult to change the safety culture;

5. The railway industry traditionally has a strong organisational culture, and hence change will be difficult to achieve, as evidenced by the absence of change identified in this research.

6. In contrast to previous research, one of the most conclusive finding is that attempting to change a safety culture could damage a prevailing organisational culture. In the case described in this thesis ineffective communications had a detrimental affect on the safety culture. In part this related to the ineffective communication strategies utilised, which resulted in communications being destructive of the organisational inter-relations.

This dissertation has described research into an organisation undergoing change and via the use of multiple methods has shown the relationship between safety culture and communications. Triangulation of the three data sources, observation, interviews and attitude surveys provided a rich picture which describes a series of communication failures and the impact of these upon the safety culture. Also highlighted is the importance of organisational learning for organisations, particularly those undergoing change, and organisation's using information effectively. The notion of learned helplessness is also used to explain the reasons why the organisation fails to learn, and the strategies required to explicate organisations from this cycle.

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# Appendices

*Table of contents*

# Appendix A

## *Research Diary*

| | |
|---|---|
| 7.6.94 | Meeting with Managing Director, Richard Booth and myself setting up research. |
| 14.6.94 | Meeting with Head of Compliance and Standards |
| 23.6.94 | Attendance at Executive Management Safety Group |
| 15.7.94 | Meeting about safety case |
| 2.8.94 | Shadowed Audit team |
| 5.8.94 | Shadowed Audit team |
| 24.8.94 | Shadowed Audit team; Progress meeting |
| 7.9.94 | Meeting with Railtrack about safety case and COMPASS |
| 30.9.94 | Progress Meeting |
| 3.10.94 | Meeting with BRB |
| 12.10.94 | Shadowed audit team |
| 13.10.94 | Presentation of research plan to organisation |
| 25.10.94 | Interview/Meetings - Management (Executive) |
| 27.10.94 | Interviews/Meetings - Management (Executive) |
| 4.11.94 | Interviews/Meetings - Management (Executive) |
| 10.11.94 | Executive Management Safety Group |
| 11.11.94 | Tour of Lines & Meeting |
| 7.12.94 | Visit to Train Maintenance Depot |
| 8 & 9.12.94 | Safety Case formulation |
| 12.12.94 | Meetings at Train Maintenance Depot |
| 15 & 16.12.94 | Safety Case meeting |
| 20.12.94 | Retail Meeting |
| 10.1.95 | Safety Case - external panel |
| 12.1.95 | Progress Meeting |
| 13.1.95 | Executive Management Safety Group |
| 18.1.95 | Safety Case presentation to Railtrack |
| 19.1.95 | Interviews/Meeting - Management (Executive) |

| | |
|---|---|
| 1.2.95 | Interviews - Pilot Study |
| 2.2.95 | Interviews - Pilot Study |
| 3.2.95 | Interviews - Pilot Study |
| 16.2.95 | Meetings |
| 24.2.95 | Safety Representatives Meeting |
| 1.3.95 | Meeting |
| 15.3.95 | Meeting |
| 16.3.95 | Executive Management Safety Group |
| 21.3.95 | Interviews/Meetings |
| 22.3.95 | Progress Meeting |
| 23.3.95 | Retail Safety Group |
| 27.3.95 | Train Maintenance Depot |
| 29.3.95 | Meeting on SPADs |
| 30.3.95 | Drivers briefing & Interviews |
| 6.4.95 | Drivers briefing & Interviews |
| 7.4.95 | Interviews (Study 1) |
| 10.4.95 | Interviews (Study 1) |
| 11.4.95 | Interviews (Study 1) |
| 19.4.95 | Interviews (Study 1) |
| 21.4.95 | Interviews (Study 1) |
| 24.4.95 | Interviews (Study 1) |
| 25.4.95 | Interviews (Study 1) |
| 26.4.95 | Safety Representatives Meeting / Interviews (Study 1) |
| 27.4.95 | Interviews (Study 1) |
| 10.5.95 | Interviews (Study 1) |
| 8.6.95 | Meeting |
| 15.6.95 | Meeting |
| 16.6.95 | Meeting |
| 20.6.95 | BP - How they communicate information over a network |
| 6.7.95 | Meeting |
| 7.7.95 | Executive Management Safety Group |
| 24.7.95 | Meeting |
| 8.8.95 | Interviews/ Meetings - Management (Executive & Senior) |

| | |
|---|---|
| 17.8.95 | Interviews/ Meetings - Management (Executive & Senior) |
| 18.8.95 | Commercial Operations Group - Cascade Study |
| 1.9.95 | Briefings Observation - Cascade Study |
| 4.9.95 | Business Meeting |
| 13.9.95 | Briefings Observation - Cascade Study |
| 19.9.95 | Briefings Observation - Cascade Study |
| 27.9.95 | Briefings Observation & follow-up interviews - Cascade Study |
| 2.10.95 | Briefings Observation & follow-up interviews - Cascade Study |
| 5.10.95 | Briefings Observation & follow-up interviews - Cascade Study |
| 18.10.95 | Progress Meeting |
| 27.10.95 | Briefings Observation & follow-up interviews - Cascade Study |
| 2.11.95 | Briefings Observation - Cascade Study |
| 22.11.95 | Shadow risk assessment with H&S rep. |
| 30.11.95 | Interviews - Study Two |
| 5.12.95 | Interviews - Study Two |
| 6.12.95 | Interviews - Study Two- cancelled snow |
| 8.12.95 | Interviews - Study Two - cancelled snow |
| 12.12.95 | Interviews - Study Two |
| 14.12.95 | Interviews - Study Two |
| 15.12.95 | Interviews - Study Two; Progress Meeting |
| 18.12.95 | Interviews - Study Two - flu epidemic |
| 21.12.95 | Interviews - Study Two |
| 12.1.96 | Interviews - Study Two |
| 17.1.96 | Interviews - Study Two |
| 18.1.96 | Interviews - Study Two |
| 25.1.96 | Interviews - Study Two |
| 1.2.96 | Interviews - Study Two |
| 2.2.96 | Executive Management Safety Group |
| 6.2.96 | Interviews - Study Two |
| 26.2.96 | Risk Management to the Millennium Conference, Bradford |
| 18.3.96 | Meeting |
| 7.7.96 | International Ergonomics and Safety Conference, Zurich. |
| 15.8.96 | Seminar at European Space Agency |

# Appendix B

## *Participants*

The Train Operating Company was hierarchical in structure, with a Managing Director and six directors which comprised the Executive Management Team. These directors were functionally oriented, and had an immediate management team in their function as well as supervisors, team leaders and the staff.

In the familiarisation stage of the research the executive management team were questioned. In Study One the next level down managers were interviewed as well as team leaders, supervisors and staff. In this study it was limited to personnel from the two main functions, Commercial and Production, and they were selected to represent the geographical spread of the company and the differences in the organisation. Study Two attempted to duplicate the sample from Study One although a number of organisational changes made this difficult, hence the sample was reduced. Participants for the observation and subsequent follow-up interviews of cascade briefs was through volunteers (or management volunteering them) in the two functions, commercial and production.

# Appendix C

## *Question Set - Study One*

1. What are the responsibilities of your job ?
2. Are you happy with the way safety is dealt with in your workplace ?
3. Tell me about safety in your job ?
4. What do you do when you find something unsafe ?
5. How well do you think the formal safety management systems work ? *(e.g. Near miss reporting, unsafe conditions reporting, signal irregularity reporting, safety briefings, team briefings, audits, hazard rectification, accident reporting, BRIMS, Rules and Regs, Training, COSHH training, SRS, NLR safety policy statements)*
6. How good do you think this company is at safety ?
7. "Got to get the job done so there's a temptation to cut corners" Comment
8. Are you happy with your job ?
9. Are you happy with the company ?
10. Is morale good at your workplace ?
11. Are management good at giving out information ?
12. Do senior management keep the workforce informed about plans and performance ?
13. How often do you see your manager ( and who it is) ?
14. What do you think of Compliance and Standards
15. What do management do to help you achieve your safety-related goals ?

16. How would you describe the organisation *(i.e. its culture, the way its managed, line management, functional management, Managing Director etc.)* ?

17. Tell me about communications - from your boss, to your boss, to workmates e.g. *how do you receive instructions, safety* ?

18. Tell me about your supervisor, workmates, senior management - *what they are like, what they think of safety, production* etc.

19. Messages from the top down e.g. accident what did the workforce hear about it, where from, any formal messages ?

20. Do you know of any accidents/near misses - who or what was to blame, factors that contribute to an unsafe working environment, prevention ?

# Appendix D

## *Question List - Study Two*

1. What are the responsibilities of your job ?

2. Are you happy with the way safety is dealt with in your workplace ?

3. Tell me about safety in your job ?

4. When you find something unsafe what do you do ?

5. How well do you think the formal safety management systems work ? *(e.g. Near miss reporting, unsafe conditions reporting, signal irregularity reporting, safety briefings, team briefings, audits, hazard rectification, accident reporting, BRIMS, Rules and Regs, Training, COSHH training, SRS, NLR safety policy statements, safety case)*

6. How good do you think the company is at safety ? (improving, static, decreasing) ?

7. "Got to get the job done so-there's a temptation to cut corners" Comment

8. Are you happy with your job ?

9. Are you happy with the company ?

10. Are management good at giving out information

11. What do you think of Compliance and Standards

12. What do management do that helps you achieve your safety-related goals

13. How would you describe the organisation (*i.e. its culture, the way its managed, line management, functional management, Managing Director etc.*) ?

14. Do you know of any accidents/near misses - who or what was to blame, factors that contribute to an unsafe working environment, prevention ?

| Question | Response * |
|---|---|
| Management (Supervisors) make fair decisions | |
| Management do not understand my problems | |
| Management have a clear sense of direction | |
| Management style does not encourage us to give our best | |
| I don't believe what I am told by senior management<br>I don't believe what I am told by my supervisor | |
| Management are overstaffed | |
| Management have good man-management skills | |
| Management are honest and state their intentions | |

| | |
|---|---|
| I usually hear about important matters first through rumours | |
| Functional management make sure we're informed | |
| Official communications are poor | |
| Management consult the workforce about all issues | |
| Briefs include information we need to know | |
| The purpose of SMS is to protect the workforce | |
| Safety Management Systems are bureaucratic | |
| Safety Management Systems hinder safe performance | |
| Incident Reports are a good idea as action always results | |
| Incident reports are time-consuming | |
| We are consulted before changes are made to systems | |
| Railtrack are very slow to resolve things | |
| Overall safety is very good here | |
| Staff safety is less important than passenger safety | |
| Complaints about safety are dealt with swiftly | |
| Cutting corners is acceptable under some circumstances | |

| | |
|---|---|
| I am frequently worried for my physical safety from:<br>unsafe equipment<br>from physical attack | |
| I am happy with safety rules<br>I am happy with fire regulations<br>I am happy with emergency procedures | |
| Safety of passengers is paramount | |
| Cutting corners is fine as long as you're not caught | |
| Instead of focusing on safety they should improve the train service | |
| Morale is generally high | |
| I am seriously considering leaving the company | |

| **Consider these factors and how they have changed:** | **For better** | **Same** | **For worse** |
|---|---|---|---|
| Communications | | | |
| Safety | | | |
| Morale | | | |
| Management behaviour | | | |
| Working conditions | | | |
| The company on the whole | | | |

* A4 version used in interviews for clarity

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| **STRONGLY AGREE** | **AGREE** | **NO OPINION** | **DISAGREE** | **STRONGLY DISAGREE** |

# Appendix E

## *Proforma for Cascade Observations*

| | |
|---|---|
| **Function:** | **No. attendees:** |
| **Location:** | **Environment:** |
| **Briefer:** | **Date:** |

| | |
|---|---|
| **Items from briefing pack:** | |
| *Financial position*<br>1. Introduction - resp for income and costs<br>2 & 3. Financial position (budget and where money is from)<br>4. Where the money goes<br>5. The way forward<br>6. The future | |
| *Train Lines reorganisation*<br>1. Introduction<br>2. Project Details<br>3. Benefits | |
| *Safety performance*:<br>1. Employee Safety Performance<br>2. Minor accidents<br>3. Passenger safety performance | |
| **Local Issues covered:** | |

| | | |
|---|---|---|
| **Length of time:** | Length of meeting | |
| | Financial position | |
| | Train Lines reorganisation | |
| | Safety performance | |
| | Any other business | |
| **Questions asked (topic):** | | |
| | Financial position | |
| | Train Lines reorganisation | |
| | Safety performance | |
| | Local Issues | |
| **Types of comment (topic):** | | |
| | Financial position | |
| | Train Lines reorganisation | |
| | Safety performance | |
| | Local Issues | |
| **Perceptions of audience** | | |

## Notes

# Appendix F

## *Question Set - follow-up to cascade briefs*

1. Tell me a bit about yourself ? (how long have you worked here, are you happy etc.)
2. Do you know whats going on in the company ?
3. How do you hear about things like that ?
4. What do you think of communications ?
5. What do you think of management ?

# Appendix G

## *Matrix Development*

The following is an example of how the matrices displayed in the results chapters were developed.

### Step One

Interviews are entered into computer and saved as a text only files. Participants transcripts were broadly classified according to function and position in hierarchy. Names were removed from the transcripts, and they were numbered.

### Step Two

The interviews were analysed using a Concordance package. A random selection were fully analysed (about six from each study), and complete word concordances developed. This produced a list of the words used in the interview transcript, and gave frequency and location in the text.

A list from an interview during Study One, excluding words of four letters or less, is shown below:

| | | | | |
|---|---|---|---|---|
| about | achieve | briefings | supervisor | communication |
| accident | audits | BRIMS | systems | Compliance |
| accidentsnear | blame | Comment | temptation | conditions |
| contribute | corners | COSHH | training | culture |
| dealt | describe | environment | their | factors |
| find | formal | functional | unsafe | giving |
| goals | happy | hazard | think | information |
| informed | instructions | irregularity | there's | managed |
| management | manager | messages | Rail | misses |
| morale | often | organisation | where | out |
| performance | plans | policy | workforce | prevention |
| production | receive | rectification | workplace | related |
| reporting | responsibility | Rules | workmates | safety |
| senior | signal | Standards | working | statements |

## Step Three

The words were analysed, both with and without the context, using the computer package and a list of words was generated on each topic (e.g. safety, communications, management, compliance and standards). A word list for communications is shown below:

Brief, briefing, briefings, bureaucracy, bureaucratic, cascaded, cascades, chat, communication, communications, grapevine, information, informed, instructions, meeting, meetings, message, rumour.

This list of words was then used to search each interview transcript for occurrences of these word using the Concordance package (Conc 1.70) where each list was entered as words to include in the concordance. Each word was then reproduced in context within the package. Each interview was then analysed using the same word list. This process continued until each topic word list had been used, and each interview analysed.

## Step Four

Preliminary matrix development. The output from Step Three is a list of all occurrences of the words in context, which were then analysed to identify sub-groups, the consistency between the groups and a way of summarising appropriately the material. Using the lists of quotations the matrices were developed and through a process of summarisation the final output was achieved. All quotations were placed into cells in the matrix, dividing the time periods, and the participant groups (management/workforce, production/commercial). These were then analysed and grouped, and then summarised. Through a process of developing categories and concepts within this and using quotations the matrix is developed.